

Task 1 Appropriate Assessment of the Joint Core Strategy for Broadland, Norwich and South Norfolk

Volume III: Designated Site Maps & Sensitivity of Features

Regulation 48 of the Conservation (Natural Habitats etc.) Regulations 1994

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List of Contents		Page
Summary		S-1
Chapters and Appendices		
1	Designated Sites and Qualifying Features	1-1
1.1	Benacre to Easton Barents SPA	1-1
1.2	Breckland SPA	1-2
1.3	Breydon Water SPA	1-3
1.4	Broadland SPA	1-4
1.5	Great Yarmouth North Denes SPA	1-5
1.6	Minsmere – Walberswick SPA	1-6
1.7	North Norfolk Coast SPA	1-7
1.8	The Wash SPA	1-8
1.9	Benacre to Easton Barents Lagoons SAC	1-10
1.10	Breckland SAC	1-11
1.11	North Norfolk Coast SAC	1-12
1.12	Norfolk Valley Fens SAC	1-14
1.13	Overstrand Cliffs SAC	1-15
1.14	Paston Great Barns SAC	1-15
1.15	River Wensum SAC	1-16
1.16	The Broads SAC	1-17
1.17	The Wash and North Norfolk Coast SAC	1-19
1.18	Waveney & Little Ouse Valley Fens SAC	1-21
1.19	Winterton – Horsey Dunes SAC	1-22
1.20	Breydon Water Ramsar	1-23
1.21	Broadland Ramsar	1-24
1.22	Minsmere – Walberswick Ramsar	1-25
1.23	North Norfolk Coast Ramsar	1-27
1.24	Redgrave & South Lopham Fens Ramsar	1-28
1.25	The Wash Ramsar	1-29
2	Sensitivities of the Qualifying Habitats	2-1
2.1	Alluvial Forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i>	2-1
2.2	Alkaline Fens	2-2
2.3	Atlantic Decalcified Fixed Dunes	2-2

2.4	Atlantic Salt Meadows (<i>Glauco-Puccinellietalia maritimae</i>)	2-2
2.5	Calcareous Fens with <i>Cladium mariscus</i> and Species of the <i>Caricion davallianae</i>	2-3
2.6	Coastal Lagoons	2-3
2.7	European Dry Heaths	2-4
2.8	Embryonic Shifting Dunes	2-4
2.9	Fixed dunes with Herbaceous Vegetation (`grey dunes`)	2-4
2.10	Hard Oligo-Mesotrophic Waters with Benthic Vegetation of <i>Chara</i> spp.	2-4
2.11	Humid Dune Slacks	2-5
2.12	Inland Dunes with open <i>Corynephorus</i> and <i>Agrostis</i> Grasslands	2-5
2.13	Large Shallow Inlets and Bays	2-6
2.14	<i>Molinia</i> Meadows on Calcareous, Peaty or Clayey-siltladen Soils	2-6
2.15	Mediterranean and thermo-Atlantic Halophilous Scrubs (<i>Sarcocornetea fruticosi</i>)	2-6
2.16	Mudflats and Sandflats not Covered by Seawater at Low Tide	2-7
2.17	Natural Eutrophic Lakes with <i>Magnopotamion</i> or <i>Hydrocharition</i> -type Vegetation	2-8
2.18	Northern Atlantic Wet Heaths with <i>Erica tetralix</i>	2-8
2.19	Perennial Vegetation of Stony Banks	2-9
2.20	Reefs	2-9
2.21	<i>Salicornia</i> and other Annuals Colonising Mud and Sand	2-9
2.22	Sandbanks which are Slightly Covered by Sea Water all the Time	2-10
2.23	Semi-natural Dry Grasslands and Scrubland Facies: on Calcareous Substrates	2-10
2.24	Shifting Dunes along the Shoreline with <i>Ammophila arenaria</i> (`white-dunes`)	2-11
2.25	Transition Mires and Quaking Bogs	2-11
2.26	Vegetated Sea Cliffs of the Atlantic and Baltic Coasts	2-12
2.27	Water Courses of Plain to Montane Levels with the <i>Ranunculion fluitantis</i> and <i>Callitricho-Batrachion</i> Vegetation	2-13
3	Sensitivities of the Qualifying Species	3-1
3.1	Amphibians	3-1
3.2	Birds	3-2
3.3	Fish	3-29
3.4	Invertebrates	3-31
3.5	Mammals	3-34
3.6	Plants	3-36
4	References	4-1

Table 1.1: Benacre to Easton Barents SPA Qualifying Features.....	1-1
Table 1.2: Breckland SPA Qualifying Features	1-2
Table 1.3: Breydon Water SPA Qualifying Features	1-3

Table 1.4: Broadland SPA Qualifying Features	1-4
Table 1.5: North Norfolk Coast SPA Qualifying Features.....	1-7
Table 1.6: Great Yarmouth North Denes SPA Qualifying Features	1-5
Table 1.7: Minsmere - Walberswick SPA Qualifying Features	1-6
Table 1.8: The Wash SPA Qualifying Features	1-8
Table 1.9: Breydon Water Ramsar Qualifying Features	1-24
Table 1.10: Broadland Ramsar Qualifying Features	1-24
Table 1.11: Minsmere – Walberswick Ramsar Qualifying Features*	1-26
Table 1.12: North Norfolk Coast Ramsar Qualifying Features.....	1-27
Table 1.13: The Wash Ramsar Qualifying Features.....	1-29
Table 3.1: Designated Species Sensitivities	3-1
Table 3.2: Designated Habitat Sensitivities.....	3-4

1 Designated Sites and Qualifying Features

1.1 Benacre to Easton Bavents SPA

(i) Site Description & Qualifying Features

The area from Benacre to Easton Bavents is located on the North Sea coast of East Suffolk, between the coastal towns of Kessingland (to the north) and Southwold (to the south) (Figure A.1). The coast here is low-lying and consists of shingle beach in the northern part and low cliffs around Easton Bavents and Covehithe. Benacre Broad is a natural brackish lagoon separated from the sea by a shingle bar, reed-fringed on the landward side and then grading into deciduous woodland on the rising ground behind. The smaller Covehithe and Easton Broads have developed similarly, with fringing reedbeds. Elsewhere, grazing marsh fields include unimproved meadows, which are separated by ditches rich in water plants and invertebrates.

Table 1.1: Benacre to Easton Bavents SPA Qualifying Features

Article 4.1*	Breeding	Over winter	Passage
Bittern	x		
Marsh harrier	x		
Little tern	x		

*species mentioned in Annex I of the European Community adopted Council Directive 79/409/EEC on the conservation of wild birds.

(ii) Conservation Objectives

Subject to natural change, to restore to favourable condition the saline lagoon feature, if the feature is not currently in favourable condition.

(iii) Vulnerability

Sea level rise will lead to more frequent saltwater inundation of the site which, whilst being beneficial for some habitats will lead to loss of others. Sea level rise is causing erosion of the lagoons through the landward movement of the confining shingle barrier. If unchecked natural processes are likely to lead to the loss of these features over time, and the area of reedbed will be reduced.

1.2 Breckland SPA

(i) Site Description & Qualifying Features

The Breckland of Norfolk and Suffolk lies in the heart of East Anglia on largely sandy soils of glacial origin (Figure A.2). The continental climate, with low rainfall and free-draining soils, has led to the development of dry heath and grassland communities. Much of Breckland was planted with conifers through the 20th century, and elsewhere arable farming is the predominant land use. The remnants of dry heath and grassland that have survived these changes, support heathland-breeding birds, where grazing by sheep and rabbits is sufficiently intensive to create short turf and open ground.

Table 1.2: Breckland SPA Qualifying Features

Article 4.1	Breeding	Over winter	Passage
Stone-curlew	x		
Nightjar	x		
Woodlark	x		

(ii) Conservation Objectives

To restore to favourable condition, if the feature is not currently in favourable condition, the habitats for the populations of the Annex 1 species of European importance (stone-curlew, *Burhinus oedicanus*, nightjar, *Caprimulgus europaeus* and woodlark, *Lullula arborea*) with particular reference to:

- Heathland;
- Acid grassland, and;
- Chalk grassland and/or inland dune communities.

(iii) Vulnerability

Breckland heathlands and acid grasslands supporting stone-curlew, nightjar and woodlark are fragile in terms of the high background levels of air pollution in the area, particularly high nitrogen loads causing undesirable habitat changes. There are development pressures on the area, particularly for infrastructure, which requires substantial discussion and mitigation in some cases. Collecting of eggs of stone-curlew, and to some extent nightjar and woodlark, is believed to be a serious threat to individual birds and to population size. The number of eggs lost to this illegal activity is not known.

1.3 Breydon Water SPA

(i) Site Description & Qualifying Features

Breydon Water is located at the extreme east of England on the coast of Norfolk (Figure A.3a). The site is an inland tidal estuary at the mouth of the River Yare and its confluence with the Rivers Bure and Waveney. It has extensive areas of mud-flats that are exposed at low tide and these form the only tidal flats on the east coast of Norfolk. There are also extensive areas of floodplain grassland adjacent to the intertidal areas.

Table 1.3: Breydon Water SPA Qualifying Features

Article 4.1	Breeding	Over winter	Passage
Bewick's swan		x	
Avocet		x	
Golden plover		x	
Ruff			x
Common tern	x		
Noteworthy:	Lapwing (breeding), important over winter assemblage (Bewick's swan, avocet, golden plover, lapwing).		

(ii) Conservation Objectives

Breyson Water component SSSI

To restore to favourable condition, if the feature is not currently in favourable condition, the habitats for the populations of Annex 1 bird species of European importance (Bewick's swan *Cygnus columbianus bewickii*, avocet *Recurvirostra avosetta* golden plover *Pluvialis apricaria*, common tern *Sterna hirundo* and ruff *Philomachus pugnax*), migratory bird species of European importance (lapwing *Vanellus vanellus*) and waterfowl that contribute to the wintering waterfowl assemblage of European importance with particular reference to:

- Intertidal mudflats and estuary;
- Salt marsh, and;
- Lowland wet grassland with ditches and water bodies.

Halvergate Marshes component SSSI

To restore to favourable condition, if the feature is not currently in favourable condition, the habitats for the populations of Annex1 bird species of European importance (Bewick's swan, whooper swan *Cygnus cygnus*, marsh harrier *Circus aeruginosus*, hen harrier *Circus cyaneus cyaneus*, avocet, golden plover, ruff, common tern), migratory bird species of European importance (pink-footed goose *Anser brachyrhynchus*, gadwall *Anas strepera*, shoveler *Anas clypeata*, lapwing) with particular reference to:

- lowland wet grassland with ditches and water bodies;

- fen meadow with ditches;
- reedbed, and;
- saltmarsh.

(iii) Vulnerability

The Breydon Water estuary is a robust ecosystem, the most sensitive feature being the high tide roost at its northern end. However, efficient drainage, recent droughts and poor water management systems have adversely affected the wet grassland part of the site (Halvergate Marshes). Future pressure from development may arise around the site, associated with Great Yarmouth, but regulation of such plans is covered by the Habitats Regulations 1994.

1.4 Broadland SPA

(i) Site Description & Qualifying Features

Broadland is a low-lying wetland complex straddling the boundaries between east Norfolk and northern Suffolk in eastern England (Figures A.3a and A.3b). The Broads are a series of flooded medieval peat cuttings. The area includes the river valley systems of the Bure, Yare and Waveney and their major tributaries. The distinctive open landscape comprises a complex and interlinked mosaic of wetland habitats including open water, reedbeds, carr woodland, grazing marsh and fen meadow, forming one of the finest marshland complexes in the UK. The differing types of management of the vegetation for reed, sedge and marsh hay, coupled with variations in hydrology and substrate, support an extremely diverse range of plant communities.

Table 1.4: Broadland SPA Qualifying Features

Article 4.1	Breeding	Over winter	Passage
Bewick's swan		x	
Whooper swan		x	
Bittern	x		
Marsh harrier	x		
Hen harrier		x	
Ruff		x	
Noteworthy:	Gadwall		

(ii) Conservation Objectives

To restore to favourable condition, if the feature is not currently in favourable condition, the habitats for the populations of Annex1 bird species of European importance (Bewick's swan, whooper swan, bittern *Botaurus stellaris*, marsh harrier, hen harrier, ruff), migratory bird species of European importance (pink-footed goose, gadwall, shoveler) and populations of waterfowl that contribute to the wintering waterfowl assemblage of European importance with particular reference to:

- Open water;

- Swamp;
- Fen,
- Reedbed;
- Fen meadow with ditches and water bodies, and;
- Lowland wet grassland with ditches and water bodies.

(iii) Vulnerability

The site has suffered from management neglect and natural succession during this century. Sea level rise and reduced summer flows in the river Bure brought about by abstraction are resulting in increasing saline intrusion into the site and generally drier summer conditions. The site also suffers from eutrophication, brought through the build up of nutrients over a long period, primarily through sewage outfalls and, to a lesser degree, agriculture. The region as a whole is a centre for tourism and recreation, however this pressure is now starting to be brought under control by the Broads Authority via the Broads Plan. Efficient drainage within much of the reclaimed parts of the wetland has reduced the wildlife value.

1.5 Great Yarmouth North Denes SPA

(i) Site Description & Qualifying Features

Great Yarmouth North Denes is located on the North Sea coast of Norfolk in East Anglia about 30 km east of Norwich (Figure A.4). Behind a wide shingle beach, the North Denes dune system is actively accreting. These low dunes are stabilised by Marram *Ammophila arenaria* and there are extensive areas of Grey Hair-grass *Corynephorus canescens*.

Table 1.5: Great Yarmouth North Denes SPA Qualifying Features

Article 4.1	Breeding	Over winter	Passage
Little tern	x		

(ii) Conservation Objectives

To restore to favourable condition, if the feature is not currently in favourable condition, the habitats for the populations of Annex 1 species of European importance (little tern), with particular reference to:

- Sand;
- Gravel, and;
- Shallow coastal waters.

(iii) Vulnerability

The little tern colonies within the Great Yarmouth North Denes SPA are dependent upon the maintenance of high accreting beaches. Coast protection schemes have the potential to disrupt or reduce sediment supply to the SPA. The success of the colony is dependent upon wardening in order to exclude people and dogs and the control of predators.

1.6 Minsmere – Walberswick SPA

(i) Site Description & Qualifying Features

Minsmere – Walberswick is located on the Suffolk coast south of Southwold in eastern England (Figure A.5). It comprises two large marshes, the tidal Blyth estuary and associated habitats. This composite coastal site contains a complex mosaic of habitats, notably areas of marsh with dykes, extensive reedbeds, mud-flats, lagoons, shingle, woodland and areas of lowland heath. It supports the largest continuous stand of Common Reed *Phragmites australis* in England and Wales and demonstrates the nationally rare transition in grazing marsh ditch plants from brackish to fresh water.

Table 1.6: Minsmere - Walberswick SPA Qualifying Features

Article 4.1	Breeding	Over winter	Passage
Bittern	x		
Marsh harrier	x		
Hen harrier		x	
Avocet	x		
Little tern	x		
Nightjar	x		
Noteworthy:	White-fronted goose (<i>albifrons</i> , winter), teal (breeding), gadwall (breeding/winter), shoveler (breeding/winter).		

(ii) Conservation Objectives

Subject to natural change, to restore to favourable condition, if the feature is not currently in favourable condition:

- The habitats for the population of Annex 1 species of European importance (avocet, bittern, marsh harrier, nightjar, hen harrier) with particular reference to swamp, marginal and inundation, standing water, grassland, coastal lagoons, marsh and heathland;
- The habitats for the population of little tern, with particular reference to shingle and shallow coastal waters, and;
- The habitats for the populations of the regularly occurring migratory bird species of European importance (gadwall, teal *Anus crecca*, shoveler, white-fronted goose *Anser albifrons albifrons*) with particular reference to grassland, marsh and standing water.

(iii) Vulnerability

The site is actively managed to prevent scrub and tree invasion of the heathlands grazing marshes and reedbeds. The coastline is going to be pushed back by natural processes, this is being addressed in the Shoreline Management Plan. Alternative sites for reed bed creation are being sought to help offset the possible future natural losses.

1.7 North Norfolk Coast SPA

(i) Site Description & Qualifying Features

The North Norfolk Coast SPA encompasses much of the northern coastline of Norfolk in eastern England (Figure A.6). It is a low-lying barrier coast that extends for 40 km from Holme to Weybourne and includes a great variety of coastal habitats. The main habitats – found along the whole coastline – include extensive intertidal sand- and mud-flats, saltmarshes, shingle and sand dunes, together with areas of freshwater grazing marsh and reedbed, which has developed in front of rising land. To the west, the coastal habitats of North Norfolk Coast SPA are continuous with The Wash SPA, with which area the ecology of this site is intimately linked.

Table 1.7: North Norfolk Coast SPA Qualifying Features

Article 4.1	Breeding	Over winter	Passage
Bittern	x		
Marsh harrier	x		
Avocet	x	x	
Little tern	x		
Sandwich tern	x		
Common tern	x		
Noteworthy:	Pink-footed goose, Brent goose (<i>bernicla</i>), wigeon, knot, internationally important assemblage of wintering birds (all noteworthy species plus avocet).		

(ii) Conservation Objectives

Subject to natural change, to restore to favourable condition, if the feature is not currently in favourable condition, the habitats for the populations of Annex 1 bird species of European importance (avocet, sandwich tern *Sterna sandvicensis*, common tern, little tern *Sternula albifrons*, bittern, marsh harrier), populations of migratory species of European importance (brent goose *Branta bernicla bernicla*, wigeon *Anas penelope*, knot *Calidris canutus*), and populations of waterfowl that contribute to the wintering waterfowl assemblage of European importance, with particular reference to:

- Coastal waters;
- Sand and shingle;
- Intertidal mudflats and sand flats;
- Intertidal mudflats and sandflats with *Zostera*;

- Saltmarsh;
- Swamp, marginal and inundation communities, and;
- Marshy grassland.

(iii) Vulnerability

The site is vulnerable to natural sea level rise, storm surges and changes in erosion patterns which are increasingly likely to affect the freshwater grazing marsh and reedbed habitats. There is increasing interest in abstraction of groundwater for irrigation of arable land which may affect freshwater spring flows onto grazing marshes and the site is visited by a large number of tourists especially in the summer.

1.8 The Wash SPA

(i) Site Description & Qualifying Features

The Wash is located on the east coast of England and is the largest estuarine system in the UK (Figure A.7). It is fed by the rivers Witham, Welland, Nene and Great Ouse that drain much of the east Midlands of England. The Wash comprises very extensive saltmarshes, major intertidal banks of sand and mud, shallow waters and deep channels. The eastern end of the site includes low chalk cliffs at Hunstanton. In addition, on the eastern side, the gravel pits at Snettisham are an important high-tide roost for waders. The intertidal flats have a rich invertebrate fauna and colonising beds of Glasswort *Salicornia* spp. which are important food sources for the large numbers of waterbirds dependent on the site. The sheltered nature of The Wash creates suitable breeding conditions for shellfish, principally mussel *Mytilus edulis*, cockle *Cardium edule* and shrimps. To the north, the coastal habitats of The Wash are continuous with Gibraltar Point SPA, whilst to the east The Wash adjoins the North Norfolk Coast SPA.

Table 1.8: The Wash SPA Qualifying Features

Article 4.1	Breeding	Over winter	Passage
Bewick's swan		x	
Bar-tailed godwit		x	
Little tern	x		
Common tern	x		
Noteworthy:	Pink-footed goose, Brent goose (<i>bernicla</i>), shedluck, gadwall, Wigeon, pintail, goldeneye, common scoter, oystercatcher, grey plover, sanderling, dunlin (<i>alpina</i>), knot, redshank, turnstone, curlew, black-tailed godwit (<i>islandica</i>).		

(ii) Conservation Objectives

The Conservation Objectives for this site are, subject to natural change, to maintain the following habitats in favourable condition with particular reference to any dependent component special interest features for which the site is designated in particular:

- Coastal Saltmarsh;
- Saline Lagoons;
- Vegetated shingle;
- Littoral sediment;
- Sub-littoral sands and gravels, and;
- *Sabellaria* reefs.

(iii) Vulnerability

The biological richness of the Wash is largely dependant on the physical processes that dominate the natural systems and consequently the ecological vulnerability is closely linked to the physical environment. The intertidal zone is vulnerable to coastal squeeze as a result of land-claim, coastal defence works, sea-level rise, and storm surges. Intertidal habitats are potentially affected by changes in sediment budget caused by dredging and coastal protection, construction of river training walls and flood defence works. The site is also potentially vulnerable to gas exploration. Activities affecting sediment budget and anthropogenic causes of coastal squeeze will be addressed through the management scheme being developed jointly for the SAC/SPA on this site.

The estuary is fed by four large rivers which drain a substantial area of Eastern England. The volume and quality of water entering the Wash is dependent on the use made of these rivers for water abstraction and agricultural, and domestic effluents. Discharge consents and abstraction licenses will be reviewed under the provisions of the Habitats Regulations. There are two Air Weapons Ranges within the site; activities on these ranges are covered by a Memorandum of Understanding between the Ministry of Defence and Department of the Environment, a Declaration of Intent between the Ministry of Defence and English Nature and by Site Management Statements with English Nature. There is a Nature Conservation Management Plan and Management Committee for one of the ranges. These issues have been addressed in the Wash Estuary Management Plan and by Local Environment Agency Plans and will be extended through the Marine Scheme of Management which is now in progress.

1.9 Benacre to Easton Barents Lagoons SAC

(i) Site Description & Qualifying Features

The SAC is included within the SPA described in section 1.1 (Figure A.1). The SAC covers different types of habitats from mixed woodland, bogs, marshes, water fringed vegetation and fens. It contains important areas of shingle, sea cliffs and islets. It includes a series of percolation lagoons (the Denes, Benacre Broad, Covehithe Broad and Easton Broad) for which it is designated and considered to be one of the best areas in the United Kingdom. These lagoons have been formed behind shingle barriers and are a feature of a geomorphologically dynamic system. Sea water enters the lagoons by percolation through the barriers, or by overtopping them during storms and high spring tides.

The lagoons show a wide range of salinities, from nearly fully saline in South Pool, the Denes, to extremely low salinity at Easton Broad. This range of salinity has resulted in a series of lagoonal vegetation types, including beds of narrow-leaved eelgrass *Zostera angustifolia* in fully saline or hypersaline conditions, beds of spiral tasselweed *Ruppia cirrhosa* in brackish water, and dense beds of common reed *Phragmites australis* in freshwater. The site supports a number of specialist lagoonal species.

SAC Qualifying Features - Habitats

- Coastal lagoons.

(ii) Conservation Objective

The conservation objective is, subject to natural change, to maintain in favourable condition the saline lagoon feature. Potential management actions to reduce the rate of erosion are being addressed through the Shoreline Management Plan process.

(iii) Vulnerability

The lagoons at Benacre, Covehithe and Easton are natural and result from ponded streams behind shingle barriers. These lagoons are naturally relatively transient features. As sea water enters the lagoons (through overtopping of the barriers during high tides) it erodes the barriers and will eventually lead to the loss of these features. The lagoons are also experiencing landwards movement of the confining barrier, leading to the reduction in the area of each lagoon.

The lagoons at the Denes were created through shingle extraction. Salinity is maintained through percolation and overtopping of the shingle barrier. No management input is required to maintain these lagoons.

1.10 Breckland SAC

(i) Site Description & Qualifying Features

The SAC is included within the limits of the SPA although covering a smaller area (Figure A.2). The SAC is dominated by dry grassland and steppes (59.4%) with smaller areas of heath, scrub, maquis and garrigue. It also includes freshwater bodies for which it is also designated.

Breckland SAC has one of the best-preserved systems of active inland sand dunes in the UK. The inland dunes are in part characterised by the nationally rare grey hair-grass, *Corynephorus canescens*, which is associated with open conditions with active sand movement. The site shows the colonisation sequence from open sand to acidic grass-heath.

The dry heaths of Breckland are representative of European dry heaths in East Anglia and in eastern England. The highly variable soils have resulted in mosaics of heather-dominated heathland, acidic grassland and calcareous grassland that are unlike those of any other site. Breckland is important for rare plants, such as perennial knawel *Scleranthus perennis* ssp. *prostratus*, and rare invertebrates.

Breckland in East Anglia is also the most extensive surviving area of the rare grassland type CG7 *Festuca ovina* – *Hieracium pilosella* – *Thymus praecox* grassland. The grassland is rich in rare species typical of dry, winter-cold, continental areas, and approaches the features of grassland types in central Europe more than almost any other semi-natural dry grassland found in the UK.

The Breckland meres in Norfolk contains examples of natural eutrophic lakes in the east of England. As a consequence of the natural fluctuations in groundwater tables these lakes occasionally dry out. The site supports a significant presence of the great crested newt *Triturus cristatus*.

The SAC is also important as it includes alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion*, *Alnion incanae*, *Salicion albae*) for which the area is considered to support a significant presence.

SAC Qualifying Features - Habitats

- Inland dunes with open *Corynephorus* and *Agrostis* grasslands;
- Natural eutrophic lakes with *Magnopotamion* or *Hydrocharition*-type vegetation;
- European dry heaths;
- Semi-natural dry grasslands and scrubland facies: on calcareous substrates (*Festuco-Brometalia*), and;
- Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion*, *Alnion incanae*, *Salicion albae*), Priority feature.

SAC Qualifying Features - Species

- Great crested newt *Triturus cristatus*.

(ii) Conservation Objectives

The conservation objective is to maintain in favourable condition the:

- Semi-natural dry grasslands and scrubland facies on calcareous substrates.

It is also a conservation objective for this designated site to maintain in favourable condition the habitats for the population of the Annex 1 bird species with particular reference to:

- Heathland;
- Acid grassland, and;
- Chalk grassland and/or inland dune communities.

As means of re-introducing traditional management techniques through management agreements and in particular Environmental Sensitive Area payments is in place. Local groundwater abstraction is also being addressed by Natural England and the Environment Agency.

(iii) Vulnerability

In recent decades areas of heathland and chalk grassland have been lost due to invasion by self-sown trees/shrubs. The cessation of traditional cutting and grazing management has contributed to the spread of scrub and woodland. Grazing by sheep/cattle is essential to the maintenance of habitats.

Main problems in the SAC include: nutrient deposition due to atmospheric pollution and adjacent arable land; uncontrolled and inappropriate recreational activities, and local ground water abstraction which has a deleterious impact on the natural eutrophic lakes.

The presence of strong populations of rabbits are important in maintaining the Breckland swards.

1.11 North Norfolk Coast SAC

(i) Site Description & Qualifying Features

The North Norfolk Coast SAC is located on the northern part of East Anglia (Figure A.6). The site is important for coastal sand dunes as it provides the only British example of a barrier beach system. The open coast is characterised by large areas of clean mobile sand subject to fully marine conditions and areas of shingle and sea cliffs. The whole site is characterized by a complex of saltmarshes, generally developing behind sand dunes and shingle structures with extensive areas of intertidal sand and mudflats.

Along the coast there are also good examples of transitional habitats from sand dune-shingle to saltmarsh, strand and embryo dune and areas of dune scrub.

The species petalwort *Petalophyllum ralfsii* and otter *Lutra lutra* are present on site but not a primary reason for the site selection.

SAC Qualifying features- Habitats

- Coastal lagoons;
- Perennial vegetation of stony banks;
- Mediterranean and thermo-Atlantic halophilous scrubs (*Sarcocornetea fruticosi*);
- Embryonic shifting dunes;
- Shifting dunes along the shoreline with *Ammophila arenaria* (‘white dunes’);
- Fixed dunes with herbaceous vegetation (‘grey dunes’), and;
- Humid dune slacks.

SAC Qualifying features- Species

- Petalwort *Petalophyllum ralfsii*; and;
- Otter *Lutra lutra*.

(ii) Conservation Objectives

The conservation objectives are subject to natural change to maintain in favourable condition the qualifying features of the designation which implies restoration if the feature(s) are not currently in favourable condition. In addition it is also a conservation objective to maintain in favourable condition the habitats for the populations of Annex 1 bird species, migratory species and the habitats for the waterfowl assemblage of European importance. This includes the habitats:

- Coastal waters;
- Sand and shingle;
- Intertidal mudflats and sandflats;
- Saltmarsh;
- Swamp, marginal and inundation communities, and;
- Marshy grassland.

(iii) Vulnerability

The site is most vulnerable to flood and flood defences, sea level rise, coastal retreat, water level management, habitat recreation and visitor pressure.

1.12 Norfolk Valley Fens SAC

(i) Site Description & Qualifying Features

Norfolk Valley Fens comprises a series of valley-head spring-fed fens which are very rare in the lowlands (Figures A.8a and 8b). Most of the vegetation at this site is of the small sedge fen type, but with transitions to reedswamp and other fen and wet grassland types. The individual fens vary in their structure according to intensity of management and provide a wide range of variation. There is a rich flora associated with these fens.

The site is considered to be one of the best areas in the United Kingdom for the narrow-mouthed whorl snail *Vertigo angustior*, and the desmoulin's whorl snail *Vertigo moulinsiana*.

SAC Qualifying Features - Habitats

- Alkaline fens;
- Northern Atlantic wet heaths with *Erica tetralix*;
- European dry heaths;
- Semi-natural dry grasslands and scrubland facies: on calcareous substrates (*Festuco-Brometalia*);
- Molinia meadows on calcareous, peaty or clayey-siltladen soils (*Molinion caeruleae*);
- Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae*, and;
- Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion*, *Alnion incanae* and *Salicion albae*).

SAC Qualifying Features - Species

- Narrow-mouthed whorl snail *Vertigo angustior*, and;
- Desmoulin's whorl snail *Vertigo moulinsiana*.

(ii) Conservation Objectives

The conservation objectives are to maintain in favourable condition the qualifying features of the designation.

Management agreements, Countryside Stewardship and ESA payments help towards the reintroduction or promotion of the continued use of traditional management. Improved understanding of the water needs of these wetlands is required and is the subject of work by the Environment Agency and Natural England. Any effects of groundwater abstraction which are identified will be addressed through appropriate licensing regimes, and the Environment Agency Review of Consents and Asset Management Plans.

(iii) Vulnerability

These alkaline fens are very vulnerable to reductions on the water table and to a decrease in the volume of spring flows arising from groundwater abstraction.

The cessation of traditional cutting and grazing management has contributed to the spread of scrub and woodland leading to the drying-out of the fens.

1.13 Overstrand Cliffs SAC

(i) Site Description & Qualifying Features

The Overstrand Cliffs are located on the coast of Norfolk south to Cromer (Figure A.9). The site is one of the best examples of unprotected vegetated soft cliffs on the North Sea coast in the most easterly part of the UK. Much of the length is unprotected by sea defences and is therefore natural in character. The 70 m high cliffs are subject to moderately frequent land slips resulting in a cycle of vegetation communities in various successional stages, whilst wet fen vegetation occurs around seepage areas. A diverse range of invertebrates are supported here.

SAC Qualifying Features – Annex I Habitats

- Vegetated sea cliffs of the Atlantic and Baltic coasts.

(ii) Conservation Objectives

The conservation objective is, subject to natural change, to maintain in favourable condition the vegetated sea cliffs of the Atlantic and Baltic coasts.

The current Shoreline Management Plan allows for 'do nothing', i.e. retreat along all but the extreme eastern end of this section. Therefore, the site is probably of low vulnerability.

(iii) Vulnerability

Overstrand Cliffs are composed of Pleistocene sands and clays with seepages which result in moderately frequent landslips. The site is most vulnerable to coastal protection measures and artificial drainage to prevent slippages. Adjacent land use is predominantly golf course, and some houses on the eastern side.

1.14 Paston Great Barns SAC

(i) Site Description & Qualifying Features

Paston Great Barn is a 16th century thatched barn and its associated outbuildings, standing in improved grassland and other land (Figure A.10). The barn supports the only known example of a maternity roost of barbastelles *Barbastella barbastellus* in a building. The colony roosts in cracks and crevices in the roof timbers.

SAC Qualifying Features –Annex II Species

- Barbastelles *Barbastella barbastellus*.

(ii) Conservation Objectives

To maintain the barbastelle population at a favourable condition. There are proposals to develop part of the outbuildings as a visitor/exhibition centre. Natural England considers a sympathetic development with legally binding safeguards to reduce disturbance to a minimum and take sustainable approach to maintaining the building, and therefore the roost site. This approach will also provide on-site security. The Great Barn will not be used at all during the breeding season.

(iii) Vulnerability

Threats to this species are poorly understood, but its low population density and slow population growth make it particularly vulnerable to factors such as loss and fragmentation of ancient deciduous woodland habitat, loss, destruction and disturbance of roosts (or potential roosts) in buildings, trees and underground sites and a reduction in the numbers of insect prey due to habitat simplification acting through factors such as fertiliser use and intensive grazing.

1.15 River Wensum SAC

(i) Site Description & Qualifying Features

The Wensum is a chalk-fed river in eastern England (Figure A.11). Although it is extensively regulated by weirs, *Ranunculus* vegetation occurs sporadically throughout much of the river's length. Stream water-crowfoot *R. penicillatus* ssp. *pseudofluitans* is the dominant *Ranunculus* species but thread-leaved water-crowfoot *R. trichophyllus* and fan-leaved water-crowfoot *R. circinatus* also occur. It also supports riverine white-clawed crayfish *Austropotamobius pallipes* populations.

SAC Qualifying Features – Annex I Habitats

- Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitriche-Batrachion* vegetation.

SAC Qualifying Features –Annex II Species

- White-clawed (or Atlantic stream) crayfish *Austropotamobius pallipes*;
- Desmoulin's whorl snail *Vertigo moulinsiana*;
- Brook lamprey *Lampetra planeri*, and;
- Bullhead *Cottus gobio*.

(ii) Conservation Objectives

The conservation objectives are to maintain in favourable condition, the:

- Water course of plain to montane levels with *Ranunculion fluitantis* and *Callitriche-Batrachion* vegetation.

and to maintain in favourable condition the habitats for the populations of:

- Bullhead;
- Brook lamprey;
- White-clawed crayfish, and;
- Desmoulin's whorl snail.

(iii) Vulnerability

This SAC is vulnerable to alterations in the channel form which may affect habitat diversity, and further development on the flood plain which might alter the flow regime of the river. The river's ecology is also at risk from input of silt and chemicals as a result of arable farming practices, from eutrophication, and may be threatened by water abstraction.

As with most of the remaining crayfish populations in the south and east of England, the threats from non-native crayfish species and crayfish plague are severe. Designation of the river as a SAC provides as much protection as can be afforded to such vulnerable populations.

Populations of lamprey, *Lampetra planeri*, and bulhead, *Cottus gobio*, are dependent on the maintenance of riffle habitats and might also be vulnerable to the introduction of non-native fish species. Populations of *Vertigo moulinsiana* are susceptible to interference with the emergent bank-side vegetation in which they occur.

The River Wensum Restoration Plan has been implemented to restore the river to its hydrological functionality, and will aim to take actions to reduce pressures particularly in relation to the river morphology.

1.16 The Broads SAC

(i) Site Description & Qualifying Features

The Broads SAC covers roughly the same area as the Broadland SPA and Ramsar sites (Figures A.3a and 3b).

The Broads SAC is the richest area for charophytes in Britain. The core of this interest is the Thurne Broads and particularly Hickling Broad which is the richest site in the UK. Sixteen species have been recorded within Hickling Broad, a large shallow brackish lake. Within the Broads examples of *Chara* vegetation are also found within fen pools (turf ponds) and fen and marsh ditch systems.

The Broads also contain several examples of southern natural eutrophic lakes for which this is considered to be one of the best areas in the United Kingdom. The lakes are artificial and originated from peat digging in medieval times support relict vegetation of the original Fenland flora, and collectively this site contains one of the richest assemblages of rare and local aquatic species in the UK.

This flood plain mire site in East Anglia has the largest example of calcareous fens in the UK and possibly the largest occurrence in the EU outside Sweden. The *Cladium* habitat occurs in a diverse set of conditions that maintain its species-richness and forms a large-scale mosaics with other fen types, open water and woodland, and important associated plant species including the fen orchid, *Liparis loeselii*.

The Broads is one of two sites selected for alkaline fens in East Anglia, where a main concentration of lowland fen occurs. The fens are principally of the flood plain mire type. The site contains a range of rare and local plant species, including the Annex II fen orchid *Liparis loeselii*, lesser tussock-sedge *Carex diandra*, and slender sedge *C. lasiocarpa*.

The complex of sites in the Broads of East Anglia contains the largest blocks of alder *Alnus glutinosa* wood in England containing a complex complete successional sequence from open water through reedswamp to alder woodland, which has developed on fen peat.

The Broads is the main stronghold of Desmoulin's whorl snail *Vertigo moulinsiana* in East Anglia and is one of several sites selected in this part of its range. Several large populations are known, associated with standing and flowing water and ditch systems. This is a very important area for its wetland invertebrate fauna, and many Red Data Book and Nationally Scarce species occur here.

Also present in the Broads with significant numbers is the otter, *Lutra lutra*.

SAC Qualifying features- Habitats

- Hard oligo-mesotrophic waters with benthic vegetation of *Chara* spp.;
- Natural eutrophic lakes with *Magnopotamion* or *Hydrocharition*-type vegetation;
- Transition mires and quaking bogs;
- Calcareous fens with *Cladium mariscus* and species of the *Caricion davalliana*, Priority feature;
- Alkaline fens;
- Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion*, *Alnion incanae*, *Salicion albae*) Priority feature, and;
- *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*).

SAC Qualifying features- Species

- Desmoulin's whorl snail *Vertigo moulinsiana*, and;
- Otter *Lutra lutra*.

(ii) Conservation Objectives

The conservation objectives are to maintain, in favourable condition, the habitat features of the designation, and to maintain, in favourable condition, the habitats for the populations of the qualifying species, with particular reference to:

- Open water;
- Swamp, and;
- Fen.

(iii) Vulnerability

The Broads are most vulnerable to sea level rise and reduced summer flows, due to abstraction in the northern rivers and drier summer conditions. The major consequence of these pressures is the saline intrusion into the site.

Eutrophication due to nutrients increase from sewage outfalls and agriculture is also considered a problem. Measures to reverse trophic state include phosphate striping in some of the sewage works and mud-pumping to remove enriched material from lakes, followed by biomanipulation.

Pressure from tourism and recreation is being considered by the Broads Authority through the Broads Plan. Water levels are being addressed through the Water Level Management Plans and the Environmentally Sensitive Area scheme. Appropriate standards of flood defence are necessary for the wetland, and works are currently proceeding under the Environment Agency Broads Strategy.

1.17 The Wash and North Norfolk Coast SAC

(i) Site Description & Qualifying Features

The Wash and North Norfolk Coast form one of the most important sedimentary marine areas in the UK and European North Sea coast (Figure A.7). The subtidal sandbanks vary in composition and include coarse sand through to mixed sediment at the mouth of the embayment. These support a diverse range of communities from the shallow to the deeper parts of the embayment including large areas of dense brittlestar beds and the reef-building worm *Sabellaria spinulosa* (ross worm).

The Wash is the largest marine embayment in Britain, with the second largest expanse of intertidal sediment flats in the country. These include extensive fine sands and drying banks of coarser sand which support a diverse community characterised by large numbers of polychaetes, bivalves and crustaceans.

The site is also selected for Mediterranean saltmarshes scrubs, and is one of three sites in the UK. The halophilous vegetation develops in the uppermost levels of saltmarshes where there is a transition from saltmarsh to dunes, or where dunes overly shingle.

The area is important for breeding and moulting of one of Europe's largest populations of the common seal *Phoca vitulina*. The extensive intertidal mud and sand flats provide the ideal conditions for breeding and haul-out sites for the common seal, where the subtidal sandbanks provide important feeding areas.

SAC Qualifying features- Habitats

- Sandbanks which are slightly covered by sea water all the time;
- Mudflats and sandflats not covered by seawater at low tide;
- Large shallow inlets and bays;
- Reefs;
- *Salicornia* and other annuals colonising mud and sand;
- Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*);
- Mediterranean and thermo-Atlantic halophilous scrubs (*Sarcocornetea fruticosi*), and;
- Coastal lagoons.

SAC Qualifying features- Species

- Common seal *Phoca vitulina*, and;
- Otter *Lutra lutra*

(ii) Conservation Objectives

The conservation objectives for this site are (subject to natural change) to maintain the following habitats features in favourable condition:

- Coastal saltmarsh;
- Saline lagoon;
- Vegetated shingle;
- Littoral sediment;
- Sub-littoral sands and gravels, and;
- *Sabellaria* reefs.

(iii) Vulnerability

The site is most vulnerable to changes in the physical environment in particular to coastal squeeze as a result from land-claim, coastal defence works, sea level rise and storm surges. Dredging activities and coastal defences also alter the sediment processes and budgets resulting in changes in sediment characteristics, affecting the communities which the site supports.

The seal populations are vulnerable to disturbance and disruption of the marine ecosystem upon which they depend.

1.18 Waveney & Little Ouse Valley Fens SAC

(i) Site Description & Qualifying Features

This SAC represents M24 *Molinia caerulea* – *Cirsium dissectum* fen-meadow associated with spring-fed valley fen systems in East Anglia, where *Molinia* grassland is very rare. In areas where the fen-meadow is grazed it is more species-rich, with frequent southern marsh-orchid, *Dactylorhiza praetermissa*.

This site occurs in the East Anglian centre (Figure A.12) and contains very extensive *Cladium* beds, including managed examples, as well as stands in contact zones between small sedge mire and species-poor *Cladium*. The habitat type here occurs in a different hydrological situation to the Broads, as it is a spring-fed valley fen rather than flood-plain mire.

This site is one of several supporting Desmoulin's whorl snail, *Vertigo moulinsiana*, in East Anglia.

SAC Qualifying features- Habitats

- *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*), and;
- Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae*.

SAC Qualifying features- Species

- Desmoulin's whorl snail *Vertigo moulinsiana*.

(ii) Conservation Objectives

The conservation objectives are to maintain, in favourable condition the:

- *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*), and;
- Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae*.

(iii) Vulnerability

This SAC has suffered as a consequence of loss of traditional land management. Water abstraction and land drainage have reduced the groundwater inputs and outflows from the fens resulting in the drying out of some of the fens and consequent scrub encroachment. The SAC is currently vulnerable to any further activities which might result in water loss from the habitat.

Environmentally Sensitive Area funding is being used to encourage the reintroduction of grazing. EC LIFE monies have been used by the Restoration Project Partnership to relocate one borehole, address the over-deepening of one river, and clear rotted peat and scrub. Natural England is jointly funding work with Suffolk Wildlife Trust on the National Nature Reserve. Water level management plans have been completed for over half the area.

1.19 Winterton – Horsey Dunes SAC

(i) Site Description & Qualifying Features

Winterton – Horsey Dunes SAC is the only significant area of dune heath on the east coast of England (Figure A.4). It also includes areas of acidic dune grassland, which contrasts with the nearby calcareous and species-rich dunes of north Norfolk. The vegetation is characteristic of dune heath in an eastern locality with low rainfall. The drought-resistant grey hair-grass, *Corynephorus canescens*, is a characteristic species of the open dry dune soils.

The slacks within Winterton – Horsey Dunes occur on an extremely base-poor dune system on the dry coast of East Anglia. The acidic soils of these dunes support swamp and mire communities and small areas of typical dune slack vegetation characterised by creeping willow *Salix repens* ssp. *argentea* with moss *Calliergon cuspidatum* and Yorkshire-fog *Holcus lanatus*. They represent an extreme of the geographical range and ecological variation of humid dune slacks within the UK.

SAC Qualifying features- Habitats

- Atlantic decalcified fixed dunes (*Calluno-Ulicetea*);
- Humid dune slacks;
- Embryonic shifting dunes, and;
- Shifting dunes along the shoreline with *Ammophila arenaria* (“white dunes”).

(ii) Conservation Objectives

The conservation objectives are, subject to natural change, to maintain in favourable condition the:

- Atlantic decalcified fixed dunes (*Calluno-Ulicetea*);
- Humid dune slacks;
- Embryonic shifting dunes, and;

- Shifting dunes along the shoreline with *Ammophila arenaria* (“white dunes”).

and to maintain in favourable condition the habitats for the Annex 1 bird species, with particular reference to:

- Sand;
- Gravel; and
- Shallow coastal waters.

(iii) Vulnerability

The site is most vulnerable to a concrete wall constructed in the 1960s and sea defence works. These constitute constraints and prevent the site from responding naturally to coastal processes, posing a threat to the vulnerable embryonic shifting dune communities. Beach-feeding operations also impose a threat through the possible use of sand with shell fragments, particularly to the Atlantic decalcified fixed dunes.

The site is backed by intensively-farmed arable land, and water abstraction from this area is a threat to the humid dune slack communities. Visitor pressures are high especially in the summer, resulting in erosion, fire and disturbance impacts. The site relies on rabbits to maintain open habitats, and is therefore vulnerable to outbreaks of disease.

A Coastal Habitat Action Plan (ChaMP) is scheduled to be produced by February 2002, and will attempt to address the vulnerabilities of this SAC.

1.20 Breydon Water Ramsar

(i) Site Description & Qualifying Features

This site is an inland tidal estuary at the mouth of the River Yare and its confluence with the Rivers Bure and Waveney and an adjacent area of drained floodplain (Figure A.3a). It has extensive areas of mudflats that are exposed at low tide and these form the only tidal flats on the east coast of Norfolk. It contains a large area of lowland wet grassland.

Breydon Water is internationally important for wintering waterfowl and it supports nine nationally scarce plant species: bulbous foxtail *Alopecurus bulbosus*, marsh mallow *Althaea officinalis*, slender hare's-ear *Bupleurum tenuissimum*, divided sedge *Carex divisa*, wall barley *Hordeum marinum*, *Puccinellia fasciculata*, borrel saltmarsh grass *Puccinelliarupestris*, eelgrass *Zostera marina* and dwarf eelgrass *Zostera noltei*.

Table 1.9: Breydon Water Ramsar Qualifying Features

Criterion 6*	Breeding	Over winter	Passage
Bewick's swan		x	
Lapwing		x	
Noteworthy:	White-fronted goose, teal, pintail, avocet, ruff, whimbrel, greenshank, common tern.		

* species/populations occurring at levels of international importance.

Ramsar criteria for designation

Criterion 5: The site is internationally important waterfowl assemblage, and;

Criterion 6: Over winter the site regularly supports internationally important numbers of: Bewick's swan and lapwing (see **Error! Reference source not found.**).

(ii) Vulnerability

No factors are currently reported as adversely affecting the site's ecological character.

1.21 Broadland Ramsar

(i) Site Description & Qualifying Features

Broadland is a low-lying wetland complex straddling the boundaries between east Norfolk and northern Suffolk (Figures A.3a and 3b). The area includes the river valley systems of the Bure, Yare and Waveney and their major tributaries. The open distinctive landscape comprises a complex and interlinked mosaic of wetland habitats including open water, reedbeds, carr woodland, grazing marsh and fen meadow. The region is important for recreation, tourism, agriculture and wildlife.

Table 1.10: Broadland Ramsar Qualifying Features

Criterion 6	Breeding	Over winter	Passage
Bewick's Swan		x	
Wigeon		x	
Gadwall		x	
Shoveler		x	
Noteworthy:	Bean goose (<i>fabalis</i>), white-fronted goose (<i>albifrons</i>), teal, Pochard, smew, cormorant (<i>carbo</i>), bittern, marsh harrier, hen harrier, water rail, coot, ruff.		

Ramsar criteria for designation:

Criterion 2: The site supports a number of rare species and habitats within the biogeographical zone context, including the following Habitats Directive Annex I features: H7210 Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae*; Calcium-rich fen dominated by great fen sedge (saw sedge); H7230 Alkaline fens Calcium-rich springwater-fed fens; H91E0 Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion*, *Alnionincanae*, *Salicion albae*) and Alder woodland on floodplains. It includes also the Annex II species: S1016 *Vertigo moulinsiana* Desmoulin's whorl snail; S1355 *Lutra lutra* Otter; S1903 *Liparis loeselii* Fen orchid. The site supports outstanding assemblages of rare plants and invertebrates including nine British Red Data Book plants and 136 British Red Data Book invertebrates.

Criterion 6: – the site supports bird species/populations at levels of international importance (see Table 1.10).

(ii) Vulnerability

Broadland Ramsar vulnerability are similar to The Broads SAC and were discussed in section 1.16.

1.22 Minsmere – Walberswick Ramsar

(i) Site Description & Qualifying Features

This composite, Suffolk coastal site contains a complex mosaic of habitats, notably areas of marsh with dykes, extensive reedbeds, mudflats, lagoons, shingle and driftline, woodland and areas of lowland heath. The site supports the largest continuous stand of reed in England and Wales (Figure A.5) and demonstrates the nationally rare transition in grazing marsh ditch plants from brackish to fresh water. The combination of habitats create an exceptional area of scientific interest supporting nationally scarce plants, British Red Data Book invertebrates and nationally important numbers of breeding and wintering birds.

Table 1.11: Minsmere – Walberswick Ramsar Qualifying Features*

Criterion 6	Breeding	Over winter	Passage
Teal	x		
Gadwall	x		
Shoveler	x		
Bittern	x		
Marsh Harrier	x		
Avocet	x		
Bearded Tit	x		
Noteworthy:	White-fronted goose (<i>albifrons</i>), teal, gadwall, shoveler, bittern, marsh harrier, hen harrier, water rail, avocet, golden plover (<i>apricaria/altifrons</i>), ruff, black-tailed godwit (<i>islandica</i>), spotted redshank, greenshank, redshank, black-headed gull, mediterranean gull, Lesser black-backed gull (<i>graellsii</i>), little tern.		

* An important assemblage of rare breeding birds associated with marshland and reedbeds including the species listed.

Ramsar criteria for designation

Criterion 1: The site contains a mosaic of marine, freshwater, marshland and associated habitats, complete with transition areas in between. Contains the largest continuous stand of reedbeds in England and Wales and rare transition in grazing marsh ditch plants from brackish to fresh water.

Criterion 2: This site supports nine nationally scarce plants and at least 26 red data book invertebrates. Supports a population of the mollusc narrow-mouthed whorl snail *Vertigo angustior* (Habitats Directive Annex II; British Red Data Book Endangered), recently discovered on the Blyth estuary river walls.

(ii) Vulnerability

Factors adversely affecting the site’s ecological character include coastal squeeze within the Blyth Estuary, trampling damage to vegetated shingle and driftline communities, and disturbance of little tern nesting habitat.

1.23 North Norfolk Coast Ramsar

(i) Site Description & Qualifying Features

This low-lying barrier coast site extends for 40 km from Holme to Weybourne (Figure A.6) and encompasses a variety of habitats including intertidal sands and muds, saltmarshes, shingle and sand dunes, together with areas of land-claimed freshwater grazing marsh and reedbed, which is developed in front of rising land. Both freshwater and marine habitats support internationally important numbers of wildfowl in winter and several nationally rare breeding birds. The sandflats, sand dune, saltmarsh, shingle and saline lagoons habitats are of international importance for their fauna, flora and geomorphology.

Table 1.12: North Norfolk Coast Ramsar Qualifying Features

Criterion 6	Breeding	Over winter	Passage
Pink-footed goose		x	
Brent goose (<i>bernicla</i>)		x	
Wigeon		x	
Pintail		x	
Knot (<i>islandica</i>)			x
Little tern	x		
Sandwich tern	x		
Common tern	x		
Noteworthy:	White-fronted goose (<i>albifrons</i>), shelduck, gadwall, teal, shoveler, common scoter (<i>nigra</i>), velvet scoter, red-breasted merganser, cormorant (<i>carbo</i>), bittern, little egret, marsh harrier, water rail, oystercatcher, golden plover (<i>apricaria/altifrons</i>), grey plover, ruff, black-tailed godwit (<i>islandica</i>), whimbrel, curlew, spotted redshank, redshank, greenshank, turnstone, black-headed gull, mediterranean gull, roseate tern.		

Ramsar criteria for designation

Criterion 1: The site is one of the largest expanses of undeveloped coastal habitat of its type in Europe. It is a particularly good example of a marshland coast with intertidal sand and mud, saltmarshes, shingle banks and sand dunes. There are a series of brackish-water lagoons and extensive areas of freshwater grazing marsh and reed beds.

Criterion 2: Supports at least three British Red Data Book and nine nationally scarce vascular plants, one British Red Data Book lichen and 38 British Red Data Book invertebrates.

Criterion 5: The site supports waterfowl assemblages of international importance.

Criterion 6: the site supports species/populations at levels of international importance (see Table 1.12).

(ii) Vulnerability

As for North Norfolk Coast SAC the site is most vulnerable to flood and flood defences, sea level rise, coastal retreat, water level management, habitat recreation and visitor pressure.

1.24 Redgrave & South Lopham Fens Ramsar

(i) Site Description & Qualifying Features

Redgrave and Lopham Fens comprise an extensive area of spring-fed valley fen in the headwaters of the River Waveney, being the largest fen in lowland England (Figure A.12).

The site is an extensive example of lowland base-rich valley, remarkable for its lack of fragmentation which contributes to the diversity of the site. This Ramsar includes different vegetation types such as dry birch woodland, scrub and carr, floristically-rich fen grassland, mixed fen, wet heath and areas of reed and saw sedge (of international importance). The site supports a diverse assemblage of plant species and is internationally important because it supports *Molinia caerulea* meadows and *Cladium mariscus*-dominated chalk fen.

The site supports many rare and scarce invertebrates, including a population of the fen raft spider *Dolomedes plantarius* (Endangered (RDB 1); Schedule 5 of the Wildlife and Countryside Act 1981 as amended).

Ramsar criteria for designation

Criterion 1: The site is an extensive example of spring-fed lowland base-rich valley, remarkable for its lack of fragmentation.

Criterion 2: The site supports many rare and scarce invertebrates, including a population of the fen raft spider *Dolomedes plantarius*.

Criterion 3: The site supports many rare and scarce invertebrates, including a population of the fen raft spider *Dolomedes plantarius*. The diversity of the site is due to the lateral and longitudinal zonation of the vegetation types characteristic of valley mires.

(ii) Vulnerability

The site is vulnerable to: dredging; eutrophication; pollution from agricultural fertilisers, pollution from pesticides (agricultural sources), and runoff. Although these vulnerabilities have been identified for the site there is no adverse ecological change reported.

1.25 The Wash Ramsar

(i) Site Description & Qualifying Features

The Wash is the largest estuarine system in Britain. It is fed by the rivers Witham, Welland, Nene and Great Ouse (Figure A.7). There are extensive saltmarshes, intertidal banks of sand and mud, shallow waters and deep channels. It is the most important staging post and over-wintering site for migrant wildfowl and wading birds in eastern England. It supports a valuable commercial fishery for shellfish and also an important nursery area for flatfish. It holds one of the North Sea's largest breeding populations of common seal *Phoca vitulina* and some grey seals *Halichoerus grypus*. The sublittoral area supports a number of different marine communities including colonies of the reef-building polychaete worm *Sabellaria spinulosa*.

Table 1.13: The Wash Ramsar Qualifying Features

Criterion 6	Breeding	Over winter	Passage
Pink-footed goose		x	
Brent goose (<i>bernicla</i>)		x	
Pintail		x	
Oystercatcher			x
Grey plover			x
Sanderling			x
Dunlin (<i>alpina</i>)		x	
Knot (<i>islandica</i>)			x
Curlew			x
Bar-tailed godwit		x	
Redshank			x
Turnstone			x
Noteworthy:	Bean goose (<i>fabalis</i>), white-fronted goose (<i>albifrons</i>), red-throated diver, cormorant (<i>carbo</i>), eider, common scoter, avocet, ruff, whimbrel, spotted redshank, greenshank, lesser black-backed gull (<i>graellsii</i>), black-headed cull, common tern, little tern, common seal.		

Ramsar criteria for designation

Criterion 5: The site is internationally important waterfowl assemblage.

Criterion 6: Over winter and during spring/autumn passage the site regularly supports internationally important numbers of birds (see Table 1.13).

(ii) Vulnerability

Although these vulnerabilities have been identified for the site there is no adverse ecological change reported.

2 Sensitivities of the Qualifying Habitats

Not all the SACs are currently vulnerable and not all the vulnerabilities to these habitats are addressed, either positively or negatively, in these statements. Several sources were used to summarize each habitat sensitivities. These included:

- Air Pollution Information System (APIS) website, which gathers information on air pollution and impacts on habitats and species, and;
- UKBAP website, where information on each BAP habitats includes reference to current major threats to the habitat in the UK.

Reference to other sources and specialized papers are included in the text where appropriate. Priority habitats included in the UKBAP are identified.

2.1 Alluvial Forests with *Alnus glutinosa* and *Fraxinus excelsior*

Corine code: 91E0 Priority feature

Designated sites with qualifying feature: Breckland SAC; Norfolk Valley Fens SAC; The Broads SAC.

Sensitivity of the feature to disturbance:

- Land clearance: including conversion to other land-uses, particularly in woods recently established on wetland sites.
- Cessation of management: may encourage succession to drier woodland types.
- Lowering of water-tables: through drainage or water abstraction, resulting in change to drier woodland types.
- Grazing: Inappropriate grazing levels and poaching of the soil by sheep, cattle and deer leading to a change in the woodland structure, ground flora impoverishment and difficulties for regeneration.
- Flood prevention measures, river control and canalization, leading to loss of dynamic disturbance-succession systems and invertebrate communities, as well as possible reductions in the extent of individual sites.
- Constraints on the spread of woodland from conservation sites onto adjacent ground from agriculture, industrial or residential development, leading to greater uniformity of structure across the site.
- Poor water quality arising from eutrophication, industrial effluents or rubbish dumping leading to changes in the composition of the ground flora and invertebrate communities.
- Invasion by non-native species which alter vegetation composition and lower conservation value (e.g. Indian balsam *Impatiens glandulifera*);
- Air pollution which may influence particularly bryophyte and lichen communities;
- Climate change, potentially resulting in changes in the vegetation communities.

2.2 Alkaline Fens

Corine code: 7230

Designated sites with qualifying feature: Norfolk Valley Fens SAC, The Broad SAC

Sensitivity of the feature to disturbance:

- Eutrophication: through atmospheric N inputs. This may result in modifications in plant communities.
- Water abstraction: leading to changes in water table levels.
- Lack of or inappropriate management of existing fens leading to drying, scrub encroachment and succession to woodland.
- Agricultural run-off and afforestation within the catchment.

2.3 Atlantic Decalcified Fixed Dunes

Corine code: 2150 Priority feature

Designated sites with qualifying feature: Winterton – Horsey Dunes SAC.

Sensitivity of the feature to disturbance:

- Air pollution: including nitrogen deposition (nutrient enrichment) and impacts from photochemical oxidants and dusts.
- Erosion and progradation: unless artificially constrained, the seaward edges of sand dunes can be a highly mobile feature, though there is a natural trend to greater stability further inland.
- Falling water tables.
- Recreation.
- Sand dunes have also been affected in the past by housing developments, industrial development, waste tips on or adjacent to them, fly tipping and sand extraction.
- Coastal protection measures.

2.4 Atlantic Salt Meadows (*Glauco-Puccinellietalia maritimae*)

Corine code: 1330

Designated sites with qualifying feature: The Wash and North Norfolk Coast SAC.

Sensitivity of the feature to disturbance:

- Physical loss/damage: this feature is highly sensitive to physical loss through direct land reclamation and construction.

- Sea level rise: can squeeze this habitat against sea walls resulting in habitat loss.
- Recreational activities: through abrasion and selective extraction.
- Exploitation: the selective extraction of *Salicornia* as a traditional activity may lead to habitat loss and damage due to trampling of the plants. Although this activity is seen as sustainable the commercial exploitation of this species is not.
- Biological disturbance: through the introduction of non native species such as common cord-grass *Spartina anglica*.

2.5 Calcareous Fens with *Cladium mariscus* and Species of the *Caricion davallianae*

Corine code: 7210 Priority feature

Designated sites with qualifying feature: Norfolk Valley Fens SAC; The Broad SAC; Waveney & Little Ouse Valley Fens SAC.

Sensitivity of the feature to disturbance:

- Eutrophication; through atmospheric N inputs. This may result in modifications in plant communities.
- Water abstraction.
- Lack of or inappropriate management of existing fens leading to drying, scrub encroachment and succession to woodland.
- Agricultural run-off and afforestation within the catchment.

2.6 Coastal Lagoons

Corine code: 1150 Priority habitat

Designated sites with qualifying feature: Benacre to Easton Barents Lagoons SAC; North Norfolk Coast SAC; The Wash and North Norfolk Coast SAC.

Sensitivity of the feature to disturbance:

- Coastal lagoons are extremely sensitive to inputs of nutrients (sewage and fertilizers) leading to eutrophication (Sutherland & Hill, 1995);
- Pollution from industrial sources may also be detrimental as waste can accumulate to toxic levels (Sutherland & Hill, 1995);
- Erosion, and:
- Land reclamation leading to habitat loss.

2.7 European Dry Heaths

Corine code: 4030

Designated sites with qualifying feature: Breckland SAC; Norfolk Valley Fens SAC.

Sensitivity of the feature to disturbance:

- Acidification: as described above;
- Impacts of photochemical oxidants (ozone): as described above;
- Direct toxicity of atmospheric pollutants: direct toxicity is typically associated with high concentrations for short periods of time, representing acute exposure.
- Nutrient enrichment: particularly deposition of nitrogen compounds emitted from intensive livestock farming, or from other sources.
- Particulate matter (dusts): may impose damage to plant species.
- Lack of conservation management: such as light grazing, controlled burning and cutting which to lead the encroachment of trees and scrub and the simplification of vegetation structure.
- Fragmentation: and disturbance from developments such as housing and road constructions.
- Agricultural activities: including reclamation of land and overgrazing.

2.8 Embryonic Shifting Dunes

Corine code: 2110

Designated sites with qualifying feature: Winterton – Horsey Dunes SAC; North Norfolk Coast SAC.

Sensitivity of the feature to disturbance:

As in section 2.3.

2.9 Fixed dunes with Herbaceous Vegetation (‘grey dunes’)

Corine code: 2130

Designated sites with qualifying feature: North Norfolk Coast SAC.

Sensitivity of the feature to disturbance:

As in section 2.3.

2.10 Hard Oligo-Mesotrophic Waters with Benthic Vegetation of *Chara* spp.

Corine code: 3140

Designated sites with qualifying feature: The Broads SAC.

Sensitivity of the feature to disturbance:

- Air quality: including acidification and eutrophication due to atmospheric nitrogen deposition and/or, more commonly, through runoff and soil through flow from the surrounding catchment.
- Water abstraction.

2.11 Humid Dune Slacks

Corine code: 2190

Designated sites with qualifying feature: Winterton – Horsey Dunes SAC; North Norfolk Coast SAC.

Sensitivity of the feature to disturbance:

As in section 2.15.

2.12 Inland Dunes with open *Corynephorus* and *Agrostis* Grasslands

Corine code: 2330

Designated sites with qualifying feature: Breckland SAC.

Inland dunes with open *Corynephorus* and *Agrostis* grasslands are an extremely rare habitat in the UK, found in one small part of the Breckland area of East Anglia, eastern England.

Sensitivity of the feature to disturbance:

- Air pollution including: nitrogen deposition (which may lead to species composition changes due to increased nutrients); impacts of photochemical oxidants (high levels of ozone which may effect vegetation by visible injury, early senescence of leaves, and reduction of crop yield); dust (which may include localised effects of dusts covering vegetation, deposition of regional pollutants causing acidification and eutrophication, deposition of heavy metals with toxic effects on plants, animals and humans, transboundary transport of air pollutants as fine particles);
- Grazing: continued grazing is normally necessary to maintain the typical fixed dune communities, but over-grazing, particularly when combined with the provision of imported feedstuffs, can have damaging effects. Under-grazing, will lead to invasion by coarse grasses and scrub, though rabbits are locally effective in maintaining a short turf;
- Agricultural use: parts of some stabilised dune systems have been entirely converted to agricultural use, resulting in almost total loss of the conservation interest;
- Falling water tables: dune slacks support characteristic communities dependent on a seasonally high water table, including the formation of temporary or even permanent ponds. Although this habitat is resilient to some short term fall a more long term fall in the water table may led to loss of the specialist slack flora and invasion by coarse vegetation and scrub;
- Recreational activities: when uncontrolled and inappropriate, and;
- The cessation of traditional cutting and grazing management.

2.13 Large Shallow Inlets and Bays

Corine code: 1160

Designated sites with qualifying feature: The Wash and North Norfolk Coast SAC.

Sensitivity of the feature to disturbance:

- Physical loss/damage: this feature is sensitive to loss resulting from removal or smothering of the habitats which can lead to changes in coastal processes and different sedimentation patterns. Communities supported by this habitat, such as reefs of *Sabellaria spinosa* are particularly sensitive to benthic fishing activities.
- Toxic contamination: from introduction of synthetic compounds, such as polychlorinated biphenols (PCBs). These are known to be toxic under low concentrations and have the potential to increase concentration through bioaccumulation within the food chain.
- Biological disturbance; through changes in the communities and food chain due to selective extraction of species.

2.14 *Molinia* Meadows on Calcareous, Peaty or Clayey-siltladen Soils

Corine code: 6410

Designated sites with qualifying feature: Norfolk Valley Fens SAC; The Broads SAC; Waveney & Little Ouse Valley Fens SAC.

Molinia meadows are found mainly on moist, moderately base-rich, peats and peaty gley soils, often with fluctuating water tables. They usually occur as components of wet pastures or fens, and often form mosaics with dry grassland, heath, mire and scrub communities.

Sensitivity of the feature to disturbance:

- Eutrophication: through atmospheric N inputs. This may result in modifications in plant communities.
- Agriculture: due to the application of fertilizers (leading to eutrophication) and herbicides
- Water abstraction: leading to changes in water table levels.. This has lead to changes in the species composition and consequent invasion from species more adapted to high nutrient levels (English Nature, 2001).
- Lack of or inappropriate management leading to drying, scrub encroachment and succession to woodland (English Nature, 2001).

2.15 Mediterranean and thermo-Atlantic Halophilous Scrubs (*Sarcocornetea fruticosi*)

Corine code: 1420

Designated sites with qualifying feature: North Norfolk Coast SAC; The Wash and North Norfolk Coast SAC.

Sensitivity of the feature to disturbance:

- Physical loss/damage: this feature is highly sensitive to physical loss through direct land reclamation and construction. It is also sensitive to sea defence maintenance and construction which may result in physical damage.
- Sea level rise: can squeeze this habitat against sea walls resulting in habitat loss.
- Recreational activities: through abrasion and selective extraction. In addition this feature is found in marshy areas more exposed to traffic from walkers and vehicles

2.16 Mudflats and Sandflats not Covered by Seawater at Low Tide

Corine code: 1140

Designated sites with qualifying feature: The Wash and North Norfolk Coast SAC.

Sensitivity of the feature to disturbance:

- Physical loss/damage: this feature is sensitive to loss resulting from removal or smothering of the habitats which can lead to changes in coastal processes and different sedimentation patterns. Land claim and construction of training walls resulted in the expansion of saltmarshes at the expense of intertidal habitats. Mudflats are important as they support very diverse invertebrate communities, key elements in the food chain of fish and birds. In addition mudflats support other habitats through sediment supply. Loss of these intertidal habitats will affect the ability to effectively support associated habitats and species.
- Sea level rise: can squeeze this habitat against sea walls resulting in habitat loss.
- Siltation, abrasion and selective extraction: all leading to physical damage which in turn result in an increase in erosion and ultimately to habitat loss.
- Toxic contamination: from introduction of synthetic compounds, such as polychlorinated biphenols (PCBs). These are known to be toxic under low concentrations and have the potential to increase concentration through bioaccumulation within the food chain. All features of the intertidal mudflats and sandflats are considered to be highly sensitive to toxic contamination by these compounds.
- Nutrient enrichment: from riverine input, for example. Nutrient can lead to elevated growth of algae such as *Enteromorpha* spp. which may form algae mats. Ultimately this can result in anoxic conditions in the sediments with negative effects in the invertebrate communities and in the species supported by these.
- Biological disturbance; through changes in the communities and food chain due to selective extraction of species (including bait digging). Also the introduction and spread of non-native species may result in changes in species composition and in the communities functioning.

2.17 Natural Eutrophic Lakes with *Magnopotamion* or *Hydrocharition*-type Vegetation

Corine code: 3150 Priority habitat

Designated sites with qualifying feature: Breckland SAC, The Broads SAC.

In the UK natural eutrophic lakes are rare. Very few examples occur above 300 m. The *Hydrocharition*-type vegetation is rare in lakes and in the UK the most complete expression of this community type is found in the ditch systems of the Norfolk Broads.

Sensitivity of the feature to disturbance:

- Acidification: associated with atmospheric pollution arising from anthropogenically derived sulphur (S) and nitrogen (N).
- Eutrophication: resulting from organic and inorganic fertilisers and nitrogen-rich gases. Nutrient enrichment of the water, with consequent damage to plant and animal communities. Diffuse-source pollution generally exceeds that from point-sources. In addition changes in land cover can release nutrients from the soil and these may enter water bodies, causing enrichment.
- Water abstraction: for potable supply, industry or irrigation, either directly from a standing water body or from surface feeders or aquifers, can depress water levels and increase water retention time and reduced flushing rate. This can also exacerbate nutrient enrichment, cause deterioration of marginal vegetation through drawdown and cause shallow lakes to dry out.
- The introduction of fish, the removal of predators, and the manipulation of existing fish stocks for recreational fishing leads to the loss of natural fish populations and may affect plant and invertebrate communities.
- Recreational activities: may create disturbance which affects bird populations. Marginal vegetation may suffer from trampling and the action of boat hulls and propellers destroys aquatic plants and stirs up sediment, contributing to enrichment and encouraging the growth of algae. The construction of marinas and other leisure facilities may destroy valuable habitat and can lead to increased pollution.
- Release of non-native plants and animals can be very damaging. The signal crayfish *Pacifastacus leniusculus*, has had the dual impact of destabilising the biota of some waters by consuming large amounts of aquatic vegetation and eliminating many populations of native crayfish by spreading crayfish plague.

2.18 Northern Atlantic Wet Heaths with *Erica tetralix*

Corine code: 4010

Designated sites with qualifying feature: Norfolk Valley Fens SAC.

Sensitivity of the feature to disturbance:

- Air pollution including: nitrogen deposition, impacts of photochemical oxidants, dust.
- Eutrophication from atmospheric nitrogen deposition.

- **Overgrazing:** although heathland is dependent on management of grazing and burning to prevent succession to scrub or woodland, many upland heaths suffer from overgrazing and environmentally damaging burning regimes.
- **Climate change** could potentially lead to changes in vegetation composition and structure, although any increase in temperature may also be accompanied by possible increases in rainfall and wind speeds. The future position is still unclear but one of the dominant heathland species, heather, does have a relatively wide tolerance of temperature and rainfall, providing the overall climate remains oceanic.

2.19 Perennial Vegetation of Stony Banks

Corine code: 1220

Designated sites with qualifying feature: North Norfolk Coast SAC.

Sensitivity of the feature to disturbance:

- **Sediment supply:** coastal defence structures and offshore aggregate extraction may limit the sediment supply to these habitats.
- **Exploitation:** due to aggregate extraction leading to alteration of morphology and vegetation.
- **Disturbance:** due to access on foot or by vehicles either from fisherman use or recreational use.
- **Grazing:** cessation of traditional activities such as grazing lead to domination by willow carr on wetlands and changes in species composition.

2.20 Reefs

Corine code: 1170

Designated sites with qualifying feature: The Wash and North Norfolk Coast SAC.

Sensitivity of the feature to disturbance:

Physical loss/damage: this feature is mostly vulnerable from damage due to benthic fishing activities. This includes dredging for oysters and mussels, trawling for shrimp or fin fish, net fishing and potting. Aggregate extraction is also detrimental but is not considered to be as significant a threat as commercial fisheries.

2.21 *Salicornia* and other Annuals Colonising Mud and Sand

Corine code: 1310

Designated sites with qualifying feature: The Wash and North Norfolk Coast SAC.

Sensitivity of the feature to disturbance:

- **Physical loss/damage:** through removal due to land claim and coastal developments. Changes made to coastal processes may also change the tidal regime and in turn affect the suitability of the site for this feature.
- **Recreational activities:** resulting in abrasion and damage to this habitat.
- **Exploitation:** the selective extraction of *Salicornia* as a traditional activity may lead to habitat loss and damage due to trampling of the plants. Although this activity is seen as sustainable the commercial exploitation of this species is not.
- **Biological disturbance:** through the introduction of non native species such as common cord-grass *Spartina anglica*.

2.22 Sandbanks which are Slightly Covered by Sea Water all the Time

Corine code: 1110

Designated sites with qualifying feature: The Wash and North Norfolk Coast SAC.

Sensitivity of the feature to disturbance.

- **Physical loss/damage:** this feature is sensitive to loss resulting from removal or smothering of the habitats which can lead to changes in coastal processes and different sedimentation patterns.
- **Sea level rise:** can squeeze this habitat against sea walls resulting in habitat loss.
- **Siltation, abrasion and selective extraction:** all leading to physical damage which in turn result in an increase in erosion and ultimately to habitat loss.
- **Toxic contamination:** from introduction of synthetic compounds, such as polychlorinated biphenols (PCBs). These are known to be toxic under low concentrations and have the potential to increase concentration through bioaccumulation within the food chain. All features of the sandbanks are considered to be highly sensitive to toxic contamination by these compounds.
- **Nutrient enrichment:** from riverine input, for example. High nutrient concentration can lead to changes in the species composition. In addition, if very high concentration occur may result in anoxic conditions in the sediments with negative effects in the invertebrate communities and in the species support by these.
- **Biological disturbance;** through changes in the communities and food chain due to selective extraction of species (such as crabs, lobsters, flatfish shrimps and mussels). Also the introduction and spread of non-native species may result in changes in species composition and in the communities functioning.

2.23 Semi-natural Dry Grasslands and Scrubland Facies: on Calcareous Substrates

Corine code: 6210

Designated sites with qualifying feature: Breckland SAC; Norfolk Valley Fens SAC.

Sensitivity of the feature to disturbance:

- Air pollution including: nitrogen deposition, impacts of photochemical oxidants, dust.
- Agricultural intensification by use of fertilisers, herbicides and other pesticides, re-seeding or ploughing for arable crops.
- Farm specialisation towards arable cropping has reduced the availability of livestock in many lowland areas. The result is the increasing dominance of coarse grasses such as tor grass *Brachypodium pinnatum* and false oat grass *Arrhenatherum elatius* and invasion by scrub and woodland, leading to losses of calcareous grassland flora and fauna.
- Over-grazing is a less widespread problem, and is sometimes associated with supplementary feeding, which can also cause localised sward damage, due to trampling and long-term nutrient enrichment.
- Development activities such as mineral and rock extraction, road building, housing and landfill.
- Localised afforestation with hardwoods and softwoods.
- Recreational pressure bringing about floristic changes associated with soil compaction at some key sites.
- Invasion by non-native plants, including bird-sown *Cotoneaster* species, causes problems by smothering calcareous grassland communities at some sites.
- Atmospheric pollution and climate change, the influence of which is not fully assessed.

2.24 Shifting Dunes along the Shoreline with *Ammophila arenaria* ('white-dunes')

Corine code: 2120

Designated sites with qualifying feature: Winterton – Horsey Dunes SAC; North Norfolk Coast SAC.

Sensitivity of the feature to disturbance:

- Air pollution: including nitrogen deposition (nutrient enrichment) and impacts from photochemical oxidants and dusts.
- Erosion and progradation: unless artificially constrained, the seaward edges of sand dunes can be a highly mobile feature, though there is a natural trend to greater stability further inland.
- Falling water tables.
- Recreation.
- Sand dunes have also been affected in the past by housing developments, industrial development, waste tips on or adjacent to them, fly tipping and sand extraction.
- Coastal protection measures.
- Beach-feeding operations.

2.25 Transition Mires and Quaking Bogs

Corine code: 7140

Designated sites with qualifying feature: The Broads SAC.

Sensitivity of the feature to disturbance:

- Air pollution: including nitrogen deposition and impacts of photochemical oxidants, dusts and direct toxicity.
- Built development: linear developments and other land reclamation for built development affect many areas. Such developments have long-term repercussions on the stability of the ecosystem.
- Water abstraction.
- Recreational activities.

2.26 Vegetated Sea Cliffs of the Atlantic and Baltic Coasts

Corine code: 1230

Designated sites with qualifying feature: Overstrand Cliffs SAC.

Sensitivity of the feature to disturbance:

- Air pollution including: nitrogen deposition and impacts of photochemical oxidants.
- Water erosion: cliff-top vegetation may be destroyed where it is squeezed between a receding cliff face and cultivated land. Cliff erosion in many places provides an essential supply of sediment to coasts lying down-drift of the cliffs.
- Coastal protection: coastal protection systems have been built on many soft cliff coasts in order to slow or stop the rate of erosion and thus protect capital assets behind the cliff line. Cliff faces may also be re-profiled and sown with hardy grasses of little value for nature conservation. All such works have the effect of stabilising the cliff face, resulting in geological exposures being obscured, bare soil and early pioneer stages being progressively overgrown, and wet flushes drying out.
- Built development: urban or industrial development and holiday accommodation being built too close to cliff-tops. Where the cliffs are subsequently discovered to be eroding, there is often political pressure to build the type of defensive works described above. Built development also prevents cliff-top biological communities from retreating in response to cliff erosion, subjecting them to a form of 'coastal squeeze'.
- Agriculture: the cessation of traditional low-intensity grazing systems which maintained open maritime grassland vegetation. Localised eutrophication can be caused by fertiliser run-off from arable land above and this encourages coarse, vigorous 'weed' species at the expense of the maritime species. Agricultural land drains discharging on the cliff face may cause local acceleration of erosion.
- Recreational use: the siting of holiday accommodation on cliff-tops not only reduces the landscape value of a site, but can also cause heavy localised erosion and disturbance to nesting birds. It also lead to the removal of stock which consequently results increased scrub encroachment.
- Introduced species predators, such as cats and rats, can have a significant impact on populations of cliff or burrow nesting seabirds. Also the spread of certain alien, invasive plants, especially members of the flowering plant family Aizoaceae such as the hottentot fig *Carpobrotus edulis*, can have a devastating impact on indigenous maritime plant communities.

2.27 Water Courses of Plain to Montane Levels with the *Ranunculus fluitantis* and *Callitriche-Batrachion* Vegetation

Corine code: 3260

Designated sites with qualifying feature: River Wensum SAC.

Sensitivity of the feature to disturbance:

- Air quality: including acidification and eutrophication due to atmospheric nitrogen deposition and/or, more commonly, through runoff and soil through flow from the surrounding catchment.
- Abstraction: excessive abstraction mainly for public water supply. This may led to drying out of upper sections and riparian zones, and to accumulation of silt and changes in the aquatic vegetation structure.
- Physical modification: the full extent of these modifications on the animal and plant communities of chalk rivers is not known.
- Pollution: including sewage discharges and in times of low flow, high levels of nitrates (leaching from ploughed land into groundwater) and phosphate (from sewage effluent). Nutrient enrichment may lead to the excessive growths of blanket-weed have been observed on what were previously crystal-clear waters. Changes in plant communities can occur.

Hatton-Ellis and Grieve (2003) add to this the negative impacts from:

- Fisheries management: including regular 'weed' cuts in the channel; fencing off and mowing of strips along the bank; infilling and stabilization of banks; removal of unwanted fish species (e.g. pike, grayling); and stocking with farm-reared trout.

3 Sensitivities of the Qualifying Species

The bird species accounts contained within this section include an overview of species ecology (Cramp & Simmons, 2004), population estimates (Baker *et al.*, 2006), biogeographic/SPA information (Stroud *et al.* 2001), population trends (Austin *et al.*, 2008), conservation status (Birds of Conservation Concern - Gregory *et al.*, 2002), general threats (BirdLife International, 2008) and threats relating to climate change (Robinson *et al.*, 2005).

3.1 Amphibians

(i) Great Crested Newt

Designated sites with qualifying feature: Breckland SAC

Legal Protection

The great crested newt is listed on Annexes II and IV of the EC Habitats Directive and Appendix II of the Bern Convention. It is protected under Schedule 2 of the Conservation (Natural Habitats, etc.) Regulations, 1994, (Regulation 38) and Schedule 5 of the WCA 1981.

Habitat

Newts require aquatic habitats for breeding. Eggs are laid singly on pond vegetation in spring, juveniles spend most time on land, and all terrestrial phases may range a considerable distance from breeding sites.

Breeding sites are mainly medium-sized ponds, though ditches and other waterbody types may also be used less frequently. Ponds with ample aquatic vegetation (which is used for egg-laying) seem to be favoured. Broad habitat type varies greatly, the most frequent being pastoral and arable farmland, woodland, scrub, and grassland.

Sensitivity

The connectivity of the landscape is important, since great crested newts often occur in metapopulations that encompass a cluster of several or many ponds. This helps ensure the survival of populations even if sub-populations are affected.

Loss of suitable breeding ponds caused by water table reduction or in-filling for development. It is also sensitive to pollution and toxic effects of agrochemicals, farming, waste disposal, neglect or fish stocking and the degradation, loss and fragmentation of terrestrial habitats.

Climate may influence the range edge at the north of its distribution in Scotland, but other ecological or landscape factors such as pond density are probably more important in determining distribution across the main part of its British range.

3.2 Birds

(i) Bewick's Swan

Designated sites with qualifying feature: Breydon Water Ramsar, Broadland SPA/Ramsar, The Wash SPA

Legal Protection

General legal protection is conferred by the Wildlife & Countryside Act 1981 (as amended) and extended protection is afforded by Annex 1 of the EC Wild Birds Directive and Schedule 1 of the Wildlife & Countryside Act 1981 (as amended).

A small, short-necked swan, the Bewick's swan *Cygnus columbianus bewickii* is a winter visitor to Britain. Breeding birds from northern Russia arrive on their traditional wintering grounds in mid-October and depart at end of March. This species has traditionally fed on aquatic vegetation but shifted to arable land and pasture as a result of land reclamation and drainage.

Population Trends

The internationally important British population of 8,070 represents approximately 40% of the northwest European population with 99% of the British population found in the UK SPA suite.

There has been a medium increase in the national population in the past 25 years although there has been a recent decline, probably as a result of milder winters (Stroud *et al.*, 2001). With an unfavourable European conservation status and an internationally important UK population concentrated on 10 or fewer sites this species qualifies as an 'Amber List' bird of conservation concern.

Based on peak counts the Breydon Water SPA population is estimated to be 215 individuals, which represents approximately 2.7% of the British population and 1% of the northwest European population. The Broadland SPA/Ramsar population is estimated to be at least 282 individuals, which represents approximately 3.5% of the British population and 1.4% of the northwest European population. The Wash SPA constitute less than 1% the northwest European population.

Bewick's Swans at Breydon Water have declined and High-Alerts in the past 10 years and since-designation and a short-term Medium-Alert have been triggered. The trend at this site is similar to the regional and national population trends. The proportion of the regional and national populations hosted by Breydon Water has increased. However the numbers recorded by the WeBS scheme may not be indicative of the actual population because of the use of agricultural land by this species. There is no WeBS-Alert evaluation for Bewick's swan at Broadland SPA/Ramsar and The Wash SPA.

Sensitivity

Wetland drainage and eutrophication continue to affect wintering and migratory sites (Cramp & Simmons, 2004). Climate change induced threats including lower water tables and higher frequency of drought.

(ii) Whooper Swan

Designated sites with qualifying feature: Broadland SPA

Legal Protection

General legal protection is conferred by the Wildlife & Countryside Act 1981 (as amended) and extended protection is afforded by Annex 1 of the EC Wild Birds Directive and Schedule 1 of the Wildlife & Countryside Act 1981 (as amended).

Habitat

A large-sized swan, the whooper swan *Cygnus cygnus* is a scarce breeder and winter visitor to Britain. Breeding birds from Iceland arrive on their wintering grounds in October and depart before mid-April. They often inhabit open freshwater with rich bottom vegetation and marshes with a small percentage occurring on arable fields (Stroud *et al.*, 2001).

Population Trends

The internationally important British population of 5,720 represents approximately 36% of the northwest European population with 44% of the British population found in the UK SPA suite.

There has been a high increase in the national population in the past 25 years probably as a result of reduced mortality (Stroud *et al.*, 2001). With 1-3000 breeding pairs in the UK and an internationally important winter population in the UK concentrated on 10 or fewer sites this species qualifies as an 'Amber List' bird of conservation concern.

Based on peak counts the Broadland SPA population is estimated at 133 individuals, which represents 2.4% of the British population. There is no WeBS-Alert evaluation for whooper swan on the Broadland SPA.

Sensitivity

The main cause of mortality in Britain appears to be from collisions with overhead wires (Cramp & Simmons, 2004). It is threatened by habitat degradation and loss as well as climate change induced reduction in water tables and higher frequency of drought.

(iii) Pink-footed Goose

Designated sites with qualifying feature: North Norfolk Coast Ramsar, The Wash Ramsar

Legal Protection

General legal protection is conferred by the Wildlife & Countryside Act 1981 (as amended).

Habitat

A dark-headed, dark-billed 'grey goose', the pink-footed goose *Anser brachyrhynchus* is a winter visitor to Britain. Breeding birds from Greenland arrive on their wintering grounds in October and depart in April. They frequent the estuaries of eastern Scotland, North Norfolk and Lancashire where they graze on coastal food plants and agricultural crops (Stroud *et al.*, 2001). They roost on estuaries and large lakes and reservoirs and move short distances to feed.

Population Trends

The internationally important British population of 241,000 represents at least 20% of the northwest European population with 82% of the British population found in the UK SPA suite.

With an internationally important winter population concentrated on 10 or fewer sites this species qualifies as an 'Amber List' bird of conservation concern.

Based on peak counts the North Norfolk Coast Ramsar population is estimated at 23,802, which represents 12.4% of the British population and 10.6% of the northwest European population. The Wash Ramsar population is estimated at 33,265 individuals, which represents 17.3% of the British population and 14.8% of the northwest European population.

There is no WeBS-Alert evaluation for pink-footed goose on the North Norfolk Coast SPA/Ramsar or the Wash Ramsar sites.

Sensitivity

This species is threatened by disturbance and persecution of farmers, general disturbance, reduction in the intensity of management and land abandonment, Climate changed induced threats include lower water tables and habitat shifts.

(iv) Brent Goose

Designated sites with qualifying feature: North Norfolk Coast Ramsar, The Wash Ramsar

Legal Protection

General legal protection is conferred by the Wildlife & Countryside Act 1981 (as amended).

Habitat

A very dark, small, stocky goose, the brent goose *Branta bernicla* is a winter visitor to Britain. Breeding birds from the Russian high Arctic ('Dark-bellied', *B. b. bernicla*) begin to arrive at their wintering grounds in Britain from October. Large concentrations of dark-bellied brent geese can be found around The Wash and along the Norfolk, Essex and north Kent coasts where they feed on *Zostera*, *Enteromorpha*, *Ulva* and a small range of littoral plants. Breeding birds from the western Arctic ('Pale-bellied', *B. b. hrota*) spend the winter in Ireland, Northern England and Wales.

Population Trends

The internationally important British population of 98,100 represents approximately 32.7% of the northwest European population with 94% of the British population found in the SPA suite. A decline in numbers since the 1990s has been severe enough to trigger a 'medium-term' Medium Alert.

With an unfavourable European conservation status and an internationally important population in the UK concentrated on 10 or fewer sites this species qualifies as an ‘Amber List’ bird of conservation concern.

Based on peak counts the North Norfolk Coast Ramsar population is estimated at 7,486, which represents 7.6% of the British population and 3.7% of the northwest European population. The Wash population is estimated at 21,275 individuals, which represents 21.7% of the British population and 10.6% of the northwest European population.

The number of dark-bellied brent geese on the North Norfolk Coast has declined sufficiently to trigger medium-term and since site-designation Medium-Alerts. The site trend is similar to both the regional and national trends although the proportion of the regional and national populations has declined. This would suggest that adverse local conditions such as deliberate goose scaring on agricultural land may be having some detrimental impact on this species.

The number of dark-bellied brent geese on the Wash has declined by 27% and triggered a medium term Medium-Alert. The decline thought to be a result of large-scale population changes rather than adverse local conditions.

Sensitivity

Brent geese are susceptible to: disturbance from vehicles although it is relatively tolerant of human presence; reductions in its primarily food source, *Zostera*, from disease, and; persecution resulting from conflict with farmers. Threats from climate change include lower water tables, sea level rise and habitat shifts.

(v) Shelduck

Designated sites with qualifying feature: The Wash Ramsar

Legal Protection

General legal protection is conferred by the Wildlife & Countryside Act 1981 (as amended).

Habitat

A large black and white duck, the shelduck *Tadorna tadorna* is a migrant and resident breeder as well as a winter migrant to Britain. Non-breeding shelduck in Britain are part of the northwest European population.

Shelduck wintering in Britain occur on most coasts with notable concentrations on the muddy estuaries of East Anglia and the south coast of England (Stroud *et al.* 2001) where they feed on marine invertebrates such as the laver spire shell *Hydrobia ulvae*. Generally, prey species include molluscs (*Hydrobia*, *Cardium*, *Macoma*, *Mytilus*, *Montacula*, *Cingula*, *Buccinum*, *Littorina*, *Skenea*, *Paludina*, *Tellina*, *Nucula*, *Mya*, and *Theodoxus*), crustaceans, insects small fish and spawn, annelid worms (*Nereidae* and *Arenicola*), and plant materials.

Population Trends

The British winter population of 78,000 represents approximately 20% of the northwest European population. Eighty four percent of the British population occurs within the SPA suite. The number of shelduck has remained relatively stable since 2001/02 suggesting a slowing of the decline seen since 1997/98.

With more than 50% of the internationally important UK population concentrated on 10 or fewer sites this species qualifies as an ‘Amber List’ bird of conservation concern.

Based on peak counts the Wash has an estimated population of 7,277 individuals which represents an approximately 9.3% of the British population and 2.4% of the northwest European population. The internationally important Wash population has seen a decline, in line with regional and national trends has triggered short- and medium-term Medium-Alerts and a since-designation High-Alert. Large-scale processes rather than adverse site conditions are primarily responsible for the downturn in numbers on this site although local impacts of shellfisheries may be a factor.

Sensitivity

The species is threatened by habitat loss as a result of tidal barrage schemes in Europe. Threats from climate change include spatial changes in prey distribution and sea level rise.

(vi) Wigeon

Designated sites with qualifying feature: Broadland Ramsar, North Norfolk Coast Ramsar

Legal Protection

General legal protection is conferred by the Wildlife & Countryside Act 1981 (as amended).

Habitat

A medium-sized dabbling duck, the wigeon *Anas penelope* is a resident breeder and winter visitor to Britain. Breeding birds from Iceland, Scandinavia and Russia arrive on their wintering grounds in Britain from May to October. Large concentrations can be found on the Ribble Estuary, the Ouse Washes, the Somerset Levels and the North Norfolk coast. It prefers coasts with shallow, fairly sheltered waters and extensive tracts of tidal mud, sand, or salt-marsh as well as lagoons and flooded grassland.

Population Trends

The internationally important British winter population of 406,000 represents approximately 25% of the northwest European population. The UK SPA suite holds approximately 79% of the British population which has shown great variability in the past albeit with an underlying increasing trend (Banks *et al.*, 2006).

With at least 20% of the northwest European population in the UK and at least 50% of this concentrated on 10 or fewer sites, Wigeon qualifies as an ‘Amber List’ bird of conservation concern.

Based on peak counts the North Norfolk Coast Ramsar population is estimated at 17, 874 individuals, which represents 4.4% of the British population and 1.2% of the northwest European population. The wigeon population of the North Norfolk Coast has increased by 57% over the past 25 years.

There is no WeBS-Alert evaluation for wigeon at Broadland SPA/Ramsar.

Sensitivity

This species is susceptible to disturbance from freshwater intrusion, recreational activity, pollution, wetland drainage and changing wetland management practices. Threats from climate change include lower water tables and higher drought frequencies.

(vii) Gadwall

Designated sites with qualifying feature: Broadland Ramsar, Minsmere – Walberswick Ramsar

Legal Protection

General legal protection is conferred by the Wildlife & Countryside Act 1981 (as amended).

Habitat

A medium-sized dabbling duck, the gadwall *Anas strepera* is a resident breeder, migrant and winter visitor. This duck is a winter visitor to Britain and countries around the North Sea especially when its breeding range in eastern Europe and elsewhere in continental Russia is subject to winter freezing (Stroud *et al.*, 2001). In Britain, the breeding population is spread throughout south-east England, East Anglia and the Midlands, with the breeding stronghold in Norfolk (Stroud *et al.*, 2001). It prefers fairly shallow, eutrophic, standing or slow-flowing, open water, offering plenty of cover from patches or fringes of emergent vegetation and dry banks or islands (Cramp & Simmons, 2004).

Population Trends

The internationally important British winter population of 17,100 represents approximately 26% of the northwest European population. The UK SPA suite holds approximately 43% of the British population which has shown a long-term upwards trend. The population of the Broadland Ramsar site constitutes 2.0% of the northwest European population.

The British breeding population is thought to be approximately 770 pairs or 7.7% of the northwest European population. The breeding population on the Minsmere-Walberswick Ramsar site is a component of the important assemblage of rare breeding birds associated with marshland and reedbeds. The longer-established populations in south-east Scotland and East Anglia show more stable population trends with increases occurring elsewhere in southwest and south-east England, where reservoirs are more numerous (Stroud *et al.*, 2001).

With an unfavourable European conservation status, at least 50% of the breeding population in the UK concentrated on 10 or fewer sites and at least 20% of the northwest European population in winter, this species qualifies as an ‘Amber List’ bird of conservation concern.

There is no WeBS-Alert evaluation for gadwall at Broadland SPA/Ramsar or Minsmere-Walberswick SPA/Ramsar.

Sensitivity

This species is threatened by pollution and disturbance from recreational use of freshwater wetlands. Climate change induced lower water tables and higher drought frequency also poses a threat.

(viii) Teal

Designated sites with qualifying feature: Minsmere - Walberswick Ramsar

Legal Protection

General legal protection is conferred by the Wildlife & Countryside Act 1981 (as amended).

Habitat

A small dabbling duck, the teal *Anas crecca* is a resident breeder and a passage and winter visitor to Britain. Breeding birds are largely resident with the population supplemented by breeding birds from north Russia, the Baltic states, Fenno-Scandia, north Poland, north Germany, and Denmark in autumn. It prefers still, shallow, eutrophic waters, including estuaries, where they feed predominantly on seeds in winter.

Population Trends

The internationally important British winter population of 192,000 represents approximately 38% of the northwest European population. The UK SPA suite holds approximately 47% of the British population which has shown large fluctuations but the underlying trend depicts apparently healthy numbers (Banks *et al.*, 2006). The British breeding population is estimated at 1,500-2,600 birds. The breeding population on the Minsmere-Walberswick Ramsar site is a component of the important assemblage of rare breeding birds associated with marshland and reedbeds.

With at least 20% of the north-west European population in Britain during the winter months this species qualifies as an 'Amber List' bird of conservation concern.

There is no WeBS-Alert evaluation for teal at Minsmere-Walberswick SPA/Ramsar.

Sensitivity

The species is threatened by wetland habitat degradation and loss as well as upland afforestation and other land-use changes. It is susceptible to disturbance from human recreational activities, hunting and construction work. Threats from climate change include lower water tables and higher drought frequency.

(ix) Pintail

Designated sites with qualifying feature: North Norfolk Coast Ramsar, The Wash Ramsar

Legal Protection

General legal protection is conferred by the Wildlife & Countryside Act 1981 (as amended).

Habitat

A large, slender dabbling duck, the pintail *Anas acuta* is a rare migrant breeder and winter visitor to Britain. Breeding birds from Fennoscandia and Russia congregate in estuarine habitats in significant numbers in the east of England where they feed largely on *Hydrobia* snails as well as seeds, tubers and aquatic plants (Stroud *et al.*, 2001).

Population Trends

The internationally important British winter population of 27,900 represents approximately 50% of the northwest European population. The UK SPA suite holds 32% of the northwest European population with the North Norfolk Coast Ramsar site holding 1.9%.

The number of pintail has declined in recent years across northwest Europe although numbers have increased in regions of England including the south-east (Stroud *et al.*, 2001). With an unfavourable European conservation status and an internationally important population in the UK concentrated on 10 or fewer sites this species qualifies as an 'Amber List' bird of conservation concern.

The pintail population of the North Norfolk Coast SPA/Ramsar has increase by 82% in the past 25 years although there have been medium (-20%) and short-term (-17%) declines.

Sensitivity

The species is threatened by wetland habitat loss, reclamation of coastal areas, pollution, wetland drainage and changing wetland management practices. Climate change induced threats include lower water tables and higher frequency of drought.

(x) Shoveler

Designated sites with qualifying feature: Broadland Ramsar, Minsmere – Walberswick Ramsar

Legal Protection

General legal protection is conferred by the Wildlife & Countryside Act 1981 (as amended).

Habitat

A medium-sized, heavily-built dabbling duck, the shoveler *Anas clypeata* is a migrant breeder, passage and winter visitor to Britain. In winter breeding birds from Russia, the Baltic States, Fennoscandia and Iceland are widely distributed across central and southern England (Stroud *et al.*, 2001) and favour wetlands with abundant zooplankton (Wernham *et al.*, 2002).

Population Trends

The internationally important British winter population of 14,800 birds represents approximately 28% of the northwest European population. The UK SPA suite holds approximately 35% of the British population. The population on the Broadland Ramsar site constitutes 1.0% of the northwest European population with 1.6% of the northwest European population wintering at Minsmere – Walberswick.

The underlying trend of approximate stability in the British annual index over the last decade follows a steady increase. With at least 20% of the north-west European population in Britain during the winter months this species qualifies as an 'Amber List' bird of conservation concern.

There is no WeBS-Alert evaluation for shoveler at Broadland SPA/Ramsar or Minsmere-Walberswick SPA/Ramsar.

Sensitivity

The drainage of lowland wet grassland and changes in agricultural practices have posed a threat in the past and spring flooding resulting from changes in floodplain management can affect breeding success (Holden & Cleaves, 2006). Climate change induced lower water tables also pose a threat to this species.

(xi) Bittern

Designated sites with qualifying feature: Benacre to Easton Barents SPA, Broadland SPA, Minsmere – Walberswick SPA/Ramsar, North Norfolk Coast SPA

Legal Protection

General legal protection is conferred by the Wildlife & Countryside Act 1981 (as amended) and extended protection is afforded by Annex 1 of the EC Wild Birds Directive and Schedule 1 of the Wildlife & Countryside Act 1981 (as amended).

Habitat

A heavily-built heron, the bittern *Botaurus stellaris* is a rare resident breeder and winter visitor in Britain. Little is known about the pattern of dispersal, movements and migration (Wernham *et al.*, 2002). Evidence suggests that adult birds remain on or near the breeding areas throughout winter and birds away from known breeding areas in late autumn may be dispersing juvenile birds of British origin (Wernham *et al.*, 2002). Ring-recoveries suggest that any mid-winter peak in numbers around December and January would point to a hard weather movement of birds from northwest Europe (Wernham *et al.*, 2002).

The bittern favours *Phragmites* reedbeds, giving dense cover close to sheltered open waters and avoids even-aged or old, dry stand of vegetation with dense shrubs and trees as well as acid waters (pH below c. 4.5).

Population Trends

2008 saw an increase in the number of booming males (76) at 42 sites, and the number of sites with breeding females (20) (Wotton *et al.*, 2008). The UK SPA suite holds approximately 90% of the national breeding population with Benacre to Easton Barents SPA (5%), Broadland SPA (15%), Minsmere – Walberswick SPA/Ramsar (35%) and North Norfolk Coast SPA (15%) contributing 70%. In winter the UK SPA suite holds 50% of the national population with Benacre to Easton Barents SPA (2%), Broadland SPA (6%), Minsmere – Walberswick SPA/Ramsar (14%) and North Norfolk Coast SPA (5%) holding approximately 27%.

As a result of the historic population decline seen in Britain, coupled with at least a 50% decline and contraction in the breeding population over the past 25 years, this species qualifies as a 'Red List' bird of conservation concern and it has a UK biodiversity action plan.

There is no WeBS-Alert evaluation for Bittern.

Sensitivity

The bittern is threatened mainly by the loss of *Phragmites* reed marshes owing to habitat alteration through drainage, direct destruction, changes in traditional management, sea level rise and salt water intrusion, the effects of wave action from boat traffic at the edge of open water, and pollution (either eutrophication which modifies fish populations within reedbeds or pesticides which may reduce the species survival). Disturbance from humans during the nesting period is also a threat (e.g. disturbance from reed cutting, noisy recreation and water-sports, motor vehicles and hunting). Threats from climate change include lower water tables.

(xii) Marsh harrier

Designated sites with qualifying feature: Benacre to Easton Bavents SPA, Broadland SPA, Minsmere – Walberswick SPA/Ramsar, North Norfolk Coast SPA

Legal Protection

General legal protection is conferred by the Wildlife & Countryside Act 1981 (as amended) and extended protection is afforded by Annex 1 of the EC Wild Birds Directive and Schedule 1 of the Wildlife & Countryside Act 1981 (as amended).

Habitat

A large, buzzard-sized bird of prey, the marsh harrier *Circus aeruginosus* is a migrant and resident breeder as well as a passage visitor. Most breeding occurs in England, with the main concentrations in the coastal areas of Norfolk and Suffolk as well as the Broads, and north Kent (Stroud *et al.*, 2001). They hunt over a wide range of habitats and nest in reedbeds, arable crops and rough grassland.

Population Trends

The British population is estimated at 201 females. The UK SPA suite holds 74% of the national population with Benacre to Easton Bavents SPA (3.8%), Broadland SPA (13.4%), Minsmere – Walberswick SPA/Ramsar (10.2%), North Norfolk Coast SPA (8.9%) holding 36.3%.

The British population is estimated at 201 females. The UK SPA suite holds 74% of the national population with Broadland SPA holding 13.4%.

The marsh harrier almost became extinct as a British breeding species, but has recovered since the 1960s. It is an ‘Amber List’ bird of conservation concern based on an historical population decline in the UK (1800-1995) and a five-year mean of 1-300 breeding pairs in UK.

Sensitivity

Historical threats to the population include the loss and deterioration of wetland habitats as well as persecution (Stroud *et al.*, 2001). Marsh harriers are extremely prone to human disturbance at the nest site and some females will not return to the nest if there is anyone within 400 metres (Moyes and Bell, 2006). Threats from climate change include lower water tables.

(xiii) Hen Harrier

Designated sites with qualifying feature: Broadland SPA, Minsmere – Walberswick SPA

Legal Protection

General legal protection is conferred by the Wildlife & Countryside Act 1981 (as amended) and extended protection is afforded by Annex 1 of the EC Wild Birds Directive and Schedule 1 of the Wildlife & Countryside Act 1981 (as amended).

Habitat

A bird of prey, slightly smaller than a buzzard *Buteo* sp., the hen harrier *Circus cyaneus* is a migrant and resident breeder as well as a passage and winter migrant. British hen harriers are regarded as partial migrants with mainly first-winter males moving into southwest Europe or Ireland for the winter (Etheridge, 2002 and Etheridge & Summers, 2006 cited in Hardey *et al.*, 2006). Hen harriers wintering in southern Britain are believed to originate from the European mainland. Habitat selection is largely governed by the availability of preferred prey species otherwise, prefers spacious, relatively undisturbed landscapes rather than areas in intensive human use. In winter hen harriers are generally solitary, hunting small passerines, small mammals and waders. They gather at traditional communal night roosts sites at dusk.

Population Trends

The British wintering population is thought to be approximately 750 birds with most of the population concentrated in the south and east coast of England, especially within the East Anglia estuaries and the Greater Thames estuary. The UK SPA suite holds 32.5% of the British winter population with Broadland SPA and Minsmere – Walberswick SPA holding 2.9% and 2.0% respectively (Stroud *et al.*, 2001).

The hen harrier is a ‘Red List’ bird of conservation concern in the UK based on an historical population decline in the UK (1800-1995) and an unfavourable European conservation status.

Sensitivity

Population decreases have been linked to habitat loss and deterioration as well as persecution (Stroud *et al.*, 2001). Climate induced changes are not thought to be a threat to this species.

(xiv) Oystercatcher

Designated sites with qualifying feature: The Wash Ramsar

Legal Protection

General legal protection is conferred by the Wildlife & Countryside Act 1981 (as amended).

Habitat

A medium-sized, black and white wader, the oystercatcher *Haematopus ostralegus* is a migrant and resident breeder as well as a winter and passage visitor. In winter the British population consists of two sub-populations with limited interchange. The 'Atlantic' sub-population winters in Ireland, north and west Britain and is comprised of breeding birds from Iceland, Faroes, Britain and Ireland. The 'Continental' sub-population partly winters in eastern Britain and is comprised of breeding birds from Norway and the Low Countries. They inhabit shorelines colonized by molluscs, marine worms, and crustaceans which can be fed on at low tide.

Population Trends

The British winter population of 315,200 represents approximately 36% of the East Atlantic Flyway population; 51% of the British population occurs within the SPA suite.

With at least 50% of the UK winter population on 10 or fewer sites and with at least 20% of the East Atlantic Flyway breeding and non-breeding populations in the UK, this species qualifies as an 'Amber List' bird of conservation concern.

Based on peak counts the Wash has an estimated population of 21,702 individuals which represents approximately 6.8% of the British population and 2.1% of the East Atlantic Flyway population. The internationally important Wash population has declined by 23% in the past 25 years but has increase by 9% in the past five years. The proportion of the regional and national population hosted by this SPA has decreased and a High-Alert for the period since the SPA was designated and a medium-term Medium-Alert has been triggered. Large-scale population changes may be responsible in part but local activities such as shell-fishing are possibly a causal factor.

Sensitivity

The main threat to this species is from over-fishing of shellfish which are a main food source for the oystercatcher. Degradation of wintering habitats by land reclamation, pollution, human disturbance, coastal barrage construction and reduced river flows also pose a serious threat. Climate induced threats are not thought to be a significant threat to this species.

(xv) Avocet

Designated sites with qualifying feature: Breydon Water SPA, Minsmere – Walberswick SPA/Ramsar, North Norfolk Coast SPA

Legal Protection

General legal protection is conferred by the Wildlife & Countryside Act 1981 (as amended) and extended protection is afforded by Annex 1 of the EC Wild Birds Directive and Schedule 1 of the Wildlife & Countryside Act 1981 (as amended).

Habitat

A long-legged, black and white wader with an upturned bill, the avocet *Recurvirostra avosetta* is a migrant and resident breeder as well as a passage and winter migrant. The range of British breeding birds is largely restricted to the coast of East Anglia and the southeast where they nest on shallow coastal lagoons. The winter population is thought to largely comprise of British breeding birds with some birds of continental origin. They feed on insects and marine invertebrates.

Population Trends

The British population is estimated at approximately 877 breeding pairs and 3,395 wintering birds. The UK SPA suite holds 92.7% of the British breeding population and approximately 100% of the winter population. Breydon Water SPA (2.6% winter), Minsmere – Walberswick SPA/Ramsar (15.4% breeding, 21.9% winter) and the North Norfolk Coast SPA (29.9% breeding, 12.1% winter) hold a total of 45.3% of the British breeding population and 36.6% of the winter population.

As a result of greater protection from hunting the winter population has increased by 3567% in the past 25 years and now makes up approximately 3.2% of the East Atlantic Flyway population. The breeding population has seen a concomitant increase of 374% between 1974 and 1996.

The concentration of this species within 10 or fewer UK sites both during the breeding season and the winter, coupled an unfavourable European conservation status means this species qualifies as an ‘Amber List’ bird of conservation concern.

In line with the national trend, avocet numbers have increase markedly over the past 25 years at Breydon Water (6950%), Minsmere-Walberswick (9900%) and on the North Norfolk Coast (4650%).

Sensitivity

Important wintering sites are threatened by infrastructure development, land reclamation, pollution, human disturbance and reduced river flows. Threats from climate change include lower water tables, sea level rise and higher drought frequency.

(xvi) Stone-curlew

Designated sites with qualifying feature: Breckland SPA

Legal Protection

General legal protection is conferred by the Wildlife & Countryside Act 1981 (as amended) and extended protection is afforded by Annex 1 of the EC Wild Birds Directive and Schedule 1 of the Wildlife & Countryside Act 1981 (as amended).

Habitat

A large, thickset wader, the stone-curlew *Burhinus oedicnemus* is a migrant breeder in Britain. Birds arrive from their Mediterranean and West African wintering quarters in March and depart in October and November (Wernham *et al.*, 2002). They breed on grass heaths and chalk downlands especially in the Brecklands and on Salisbury Plain (Stroud *et al.*, 2001) and forage at night for surface-active invertebrates, small mammals, birds and reptiles (Wernham *et al.*, 2002).

Population Trends

The UK population is estimated at 214-227 pairs with 98% occurring on three UK SPA sites. The Breckland SPA holds 75% of the British breeding population.

As a result of a rapid contraction ($\geq 50\%$) in its breeding range in the past 25 years this species qualifies as a ‘Red List’ bird of conservation concern.

Sensitivity

Its historical declines have been attributed to habitat loss through the conversion of dry grassland to intensively managed arable farmland. Egg collecting is still a problem in some areas and the main cause of adult birds on the breeding grounds is the collision with utility lines and fences (RSPB, 2007). Climate change induced threats include a higher frequency of drought.

(xvii) Golden plover

Designated sites with qualifying feature: Breydon Water SPA

Legal Protection

General legal protection is conferred by the Wildlife & Countryside Act 1981 (as amended) and extended protection is afforded by Annex 1 of the EC Wild Birds Directive.

Habitat

A medium-sized wader, the golden plover *Pluvialis apricaria* is a migrant and resident breeder, passage and winter visitor to Britain. Birds breeding in British upland moorlands (*P. a. apricaria*) migrate south to lowland grasslands and cultivated land in winter (Wernham *et al.*, 2002). During winter these birds are joined by ‘northern’ birds of the form *altifrons*. They are predominantly surface feeders, foraging for invertebrates, earthworms, berries, seeds, and grasses on estuaries, moorland and agricultural fields.

Population Trends

The internationally important British wintering population of 250,000 birds represents approximately 13.9% of the East Atlantic Flyway population. The UK SPA suite holds 22% of the British winter population. Breydon Water SPA is a nationally important site for this species with approximately 2.0% of the population.

The coastal winter population has increased sharply in Britain since the mid 1980s (Banks *et al.*, 2006) and this is a species of minimal conservation concern. It is listed as a ‘Green List’ bird of conservation concern.

In line with the national trend, golden plover numbers at Breydon Water have increase by 1900% in the past 25 years.

Sensitivity

The species has suffered minor range contractions due to the cultivation and afforestation of heathlands including the loss of established pastures. Threats from climate change include habitat shifts as well as spatial and temporal changes in prey distribution.

(xviii) Grey Plover

Designated sites with qualifying feature: The Wash Ramsar

Legal Protection

General legal protection is conferred by the Wildlife & Countryside Act 1981 (as amended).

Habitat

A medium-sized wader, the grey plover *Pluvialis squatarola* is a passage and winter visitor to Britain. Breeding birds from the Arctic arrive in Britain between July and August before starting a protracted post-breeding moult. Feeding on shellfish and marine invertebrates, grey plover spend the winter along the Atlantic coast of Europe south to the west coast of Africa. Males are known to winter further north than females and consequently the wintering population in Britain and Ireland may be predominantly males. They concentrate on intertidal mudflats and sandy beaches where they feed on a wide range of marine invertebrates including *Notomastus latericeus* and *Arenicola marina*.

Population Trends

The British winter population of 52,750 represents approximately 30% of the East Atlantic Flyway population; 90% of the British population occurs within the SPA suite.

With at least 50% of the UK non-breeding population on 10 or fewer sites and with at least 20% of the East Atlantic Flyway non-breeding population in the UK, this species qualifies as an 'Amber List' bird of conservation concern.

Based on peak counts the Wash has an estimated population of 11,866 individuals which represents approximately 22.4% of the British population and 4.7% of the East Atlantic Flyway population. The internationally important Wash population has increased by 266% in the past 25 years.

Sensitivity

The size of the European population could make it susceptible to the perceived risks associated with small populations however it is not thought to be in decline. Threats from climate change include sea level rise, habitat shifts as well as spatial and temporal changes in prey distribution.

(xix) Lapwing

Designated sites with qualifying feature: Breydon Water Ramsar

Legal Protection

General legal protection is conferred by the Wildlife & Countryside Act 1981 (as amended).

Habitat

A medium-sized wader, the lapwing *Vanellus vanellus* is a migrant and resident breeder, passage and winter visitor to Britain. British breeding lapwings are partially migratory, with a high proportion of the winter population originating from Scandinavia, Denmark, Netherlands and Northern German (Stroud *et al.*, 2001). They forage for ground invertebrates and tend to be more concentrated on pastures in winter. Nest sites are usually located on farmland, fens, bogs and marshes.

Population Trends

The British winter population of 1.5 to 2 million represents at least 21% of the East Atlantic Flyway population. The UK SPA suite holds 10% of the British population. Breydon Water SPA holds 1.7% of the national winter population. The breeding population is estimated at 154,000.

With the internationally important UK population and the moderate decline seen in the breeding population over the past 25 years this species qualifies as an 'Amber List' bird of conservation concern.

Lapwing numbers at Breydon Water have increase by 733% in the past 25 years although there has been short (-1%) and medium term (-19%) declines.

Sensitivity

Lapwing is threatened by reduced breeding productivity as a result of agricultural intensification. Threats from climate change include lower water tables.

(xx) Knot

Designated sites with qualifying feature: North Norfolk Coast Ramsar

Legal Protection

General legal protection is conferred by the Wildlife & Countryside Act 1981 (as amended).

Habitat

A small wader, the knot *Calidris canuta* is a passage and winter visitor to Britain. Breeding birds from Arctic Canada (*C. c. islandica*) arrive in Britain in August and stay until May. A smaller number of breeding birds from the central Russian Arctic (*C. c. canutus*) pass through Britain *en route* to and from their wintering grounds in west and southern Africa.

Population Trends

The internationally important British wintering population of 283,600 birds represents 82% of the East Atlantic Flyway population. The UK SPA suite holds 70% of the East Atlantic Flyway population. This species is known to be prone to fluctuations in numbers and decreased sharply (>40%) between the 1970s and 1980s. Since then, there has been a short-term increase of 9% with an underlying 4% decrease over the past 10 years. The North Norfolk Coast SPA holds an internationally important number of birds with 3.1% of the biogeographic population.

Although the British population remains stable with a 29% increase in the past 25 years this species qualifies as an 'Amber List' bird of conservation concern because it has an unfavourable conservation status in Europe.

The number of knot on the North Norfolk Coast SPA/Ramsar has increase by 127% over the past 25 years.

Sensitivity

This species is vulnerable to extensive land reclamation projects and is threatened by the over-exploitation of shellfish that leads directly and indirectly to reductions in prey availability. Disturbance from recreational activities can reduce the size of available foraging areas. Threats from climate change include sea level rise, habitat shifts as well as spatial and temporal changes in prey distribution.

(xxi) Sanderling

Designated sites with qualifying feature: The Wash Ramsar

Legal Protection

General legal protection is conferred by the Wildlife & Countryside Act 1981 (as amended).

Habitat

A small wader, the sanderling *Calidris alba* is a passage and winter visitor to Britain. The winter population is thought to mostly originate from Siberia with birds from northeast Greenland passing through *en route* to and from wintering areas in western Africa. They can be found on estuaries and open coasts particularly in the northwest of England where they feed on small invertebrates.

Population Trends

The British winter population of 20,540 represents approximately 17% of the East Atlantic Flyway population. 15% of the British winter population occurs within the SPA suite. The British passage population is estimated at 30,000 individuals representing approximately 43% of the East Atlantic Flyway population.

Sanderling does not meet any of the bird of conservation concern criteria and therefore qualifies as a 'Green List' bird of conservation concern.

Based on peak counts the Wash has an estimated population of 558 individuals which represents approximately 2.7% of the British population. The nationally important Wash population has fluctuated markedly and the since site-designation Medium-Alert is not considered to be a major concern.

Sensitivity

The species is sensitive to disturbance from recreational activities and free-running dogs on beaches and intertidal areas. Threats from climate change include sea level rise, habitat shifts as well as spatial and temporal changes in prey distribution.

(xxii) Dunlin

Designated sites with qualifying feature: The Wash Ramsar

Legal Protection

General legal protection is conferred by the Wildlife & Countryside Act 1981 (as amended).

Habitat

A small wader, the dunlin *Calidris alpina* is a migrant breeder, passage and winter visitor to Britain. British breeding birds (*C. a. schinzii*) over-winter in south-west Europe and North-west Africa whilst breeding birds from Greenland (*C. a. arctica*) pass through Britain on their way to wintering grounds in West Africa (Stroud *et al.*, 2004). Birds over-wintering in Britain (*C. a. alpina*) arrive in the autumn from their breeding grounds in northern Scandinavia and Russia. In winter they are essentially coastal and feed on small marine invertebrates.

Population Trends

The internationally important British non-breeding population (*alpina*) of approximately 556,000 birds represents 39% of the East Atlantic Flyway population, with 78% of the British population found in the UK SPA suite.

A moderate decline (14%) in the number of birds over the past 25 years coupled by its unfavourable European conservation status and the concentration of the British population on 10 or fewer sites means this species qualifies as an ‘Amber List’ bird of conservation concern.

Based on peak counts the Wash population is estimated to be 37,598 individuals, which represents approximately 6.7% of the British population and 2.8% of the East Atlantic Flyway Population. The internationally important Wash population has declined by 26%, triggering a since site-designation Medium-Alert. This decline may be linked to overexploitation of shellfish during the late 1980s.

Sensitivity

This species is restricted to a small number of estuaries, so it is vulnerable to any changes in this habitat as well as disturbance on intertidal mudflats from construction work and people on adjacent footpaths. Threats from climate change include sea level rise, habitat shifts as well as spatial and temporal changes in prey distribution.

(xxiii) Ruff

Designated sites with qualifying feature: Breydon Water SPA, Broadland SPA

Legal Protection

General legal protection is conferred by the Wildlife & Countryside Act 1981 (as amended) and extended protection is afforded by Annex 1 of the EC Wild Birds Directive and Schedule 1 of the Wildlife & Countryside Act 1981 (as amended).

Habitat

A medium-sized wader, the ruff *Philomachus pugnax* is a migrant breeder, passage and winter visitor. Britain is at the extreme western edge of the species’ world breeding range, only very small numbers nest in the UK which includes regular breeding sites in a small cluster in the East Anglian Fens (Stroud *et al.*, 2001). The ruff winters in small numbers on the south and east coasts of Britain, where it uses a wide range of habitats in the winter, including coastal marshes, intertidal zones, inland flooded fields and the muddy margins of lakes and pools (Stroud *et al.*, 2001).

Population Trends

The UK winter population is estimated at 700 birds and 37 males in summer. Population monitoring is inadequate and wide-scale trends are unknown (Stroud *et al.*, 2004). Within the UK the winter population fluctuates widely depending on the severity of winter weather conditions. The breeding population has been increasing since it began regularly breeding in the UK in 1934/5. Approximately 91% of the British breeding population and 45% of the non-breeding population is held within the UK SPA suite.

This species qualifies as an 'Amber List' bird of conservation concern based on a five-year mean of 1-3000 pairs in the UK and with more than 50% of the winter population on ten or fewer sites.

The nationally important non-breeding population in the Broadland SPA is estimated at 96 individuals which represents 13.7% of the national population. Breydon Water SPA holds approximately 54 individuals representing 7.7% of the national population.

There is no WeBS-Alert evaluation for ruff at Breydon Water SPA/Ramsar and Broadland SPA/Ramsar.

Sensitivity

This species is threatened by pollution, wetland and floodplain drainage and changing land management practices that lead to scrub and reed overgrowth. Threats from climate change include lower water tables, spatial and temporal changes in prey distribution, higher frequency of drought and habitat shifts.

(xxiv) Bar-tailed Godwit

Designated sites with qualifying feature: The Wash SPA/Ramsar

Legal Protection

General legal protection is conferred by the Wildlife & Countryside Act 1981 (as amended) and extended protection is afforded by Annex 1 of the EC Wild Birds Directive.

Habitat

A large-sized, long-legged wader, the bar-tailed godwit *Limosa lapponica* is a passage and winter visitor to Britain. The European winter distribution of bar-tailed Godwits is centred on the estuaries of Britain and Ireland, as well as the coasts of the southern North Sea (Stroud *et al.*, 2001). This species shows a high degree of fidelity to staging and wintering areas in succeeding years. Bar-tailed Godwits are almost entirely coastal in winter, feeding mainly on worms. East coast estuaries, such as The Wash, are used as moulting, non-breeding sites and stopping-off points en route to/from the winter quarters.

Population Trends

The UK winter population is estimated at 61,590 which accounts for approximately 39% of the East Atlantic Flyway population. Of the national total 70% is held in the SPA suite. As a mid- to high-Arctic nesting species, significant between-year population changes might be expected as a consequence of variation in weather and predation pressures on breeding areas. In addition to those factors affecting breeding success, between-year fluctuations in wintering numbers in Britain and Ireland are at least in part due to weather conditions, with influxes into east-coast estuaries occurring in severe conditions.

This species qualifies as an ‘Amber List’ bird of conservation concern based on its unfavourable conservation status in Europe as well as the fact that more than 50% of the UK non-breeding population in 10 or fewer sites and more than 20% East Atlantic Flyway non-breeding population is found in the UK.

Based on peak counts the Wash population is estimated to be 11,250 individuals which represents approximately 21.4% of the British population and 9.8% of the East Atlantic Flyway population. The internationally important Wash population has increased by 53% in the past 25 years.

Sensitivity

Bar-tailed godwit is threatened throughout its range by the degradation of foraging sites due to land reclamation, pollution, human disturbance and reduced river flows. Threats from climate change include sea level rise, habitat shifts, higher frequency of drought and spatial and temporal changes in prey distribution.

(xxv) Curlew

Designated sites with qualifying feature: The Wash Ramsar

Legal Protection

General legal protection is conferred by the Wildlife & Countryside Act 1981 (as amended).

Habitat

A large-sized, long-legged wader, the curlew *Numerius arquata* is a migrant and resident breeding species with passage and over-wintering populations in Britain. Breeding predominantly takes place in upland Britain in areas of damp moorland and heathland up to 550 m. During winter, birds can be found around almost the entire British coastline with breeding birds from Scandinavia supplementing the resident population. They forage on intertidal habitats and wet grassland where they prey upon polychaete worms such as *Nereis diversicolor*, bivalves such as *Macoma balthica* and terrestrial invertebrates.

Population Trends

The British non-breeding population of 147,100 represents approximately 30% of the East Atlantic Flyway population, with 38% of the British population found within the SPA suite.

With an unfavourable European conservation status, at least 20% of the European breeding population in the UK and with at least 20% of the East Atlantic Flyway non-breeding population in the UK, this species qualifies as an ‘Amber List’ bird of conservation concern.

Based on peak counts the Wash has an estimated population of 9,442 individuals which represents approximately 6.3% of the British population and 1.1% of the East Atlantic Flyway population. The internationally important Wash population has increased by 40% since the past 25 years but has seen a short-term decline of 5% in the past five years.

Sensitivity

Wintering populations are threatened by: disturbance on intertidal mudflats from construction activities and people on adjacent footpaths; development on high-tide roosting sites, pollution; degradation of migration staging areas owing to land reclamation, pollution, human disturbance and reduced river flows. Threats from climate change include lower water tables, sea level rise and a higher frequency of drought.

(xxvi) Redshank

Designated sites with qualifying feature: The Wash Ramsar

Legal Protection

General protection is conferred by the Wildlife & Countryside Act 1981 (as amended).

Habitat

A medium-sized wader, the redshank *Tringa totanus* is a migrant and resident breeder, passage and winter visitor to Britain. Whilst southern population are largely sedentary, northern populations are migratory. The British and Irish resident breeding population of the race *britannica* is supplemented in winter by birds of the race *robusta* from Iceland and the Faeroes with additional birds from the Western Atlantic population *totanus* (Stroud *et al.*, 2004). Non-breeding birds can be found around most of the coast where they feed on marine invertebrates and small fish.

Population Trends

The British non-breeding population is estimated at approximately 116,100 birds, which represents approximately 64.4% of the East Atlantic Flyway population, with 48% of the British winter population and 46% of the passage population found within the UK SPA suite.

Whilst the winter population remains relatively stable there has been a significant decline of 29% in the UK breeding population (Risley *et al.*, 2008). This decline, coupled with an unfavourable European conservation status means this species qualifies as an 'Amber List' bird of conservation concern.

Based on peak counts the Wash population is estimated to be 6,877 individuals, which represents 5.7% of the British population and 2.5% of the East Atlantic Flyway population. The internationally important Wash population has declined by 19% in the since site-designation but has increased by 39% in the past 25 years.

Sensitivity

Redshank is threatened by the loss of breeding and wintering habitats through wetland drainage, flood control, land reclamation, industrial development, coastal barrage construction. It is also threatened by disturbance on intertidal mudflats from construction work and from people on adjacent footpaths. Threats from climate change include sea level rise, higher frequency of drought and lower water tables.

(xxvii) Turnstone

Designated sites with qualifying feature: The Wash Ramsar

Legal protection

General legal protection is conferred by the Wildlife & Countryside Act 1981 (as amended).

Habitat

A small-sized wader, the turnstone *Arenaria interpres* is scarce breeder and a passage and winter visitor to Britain. The breeding population of northeast Canada and Greenland winter in Europe especially around the Irish and North Sea to Iberia. On rare occasions isolated pairs have bred in Scotland. Birds start to arrive in Western Europe from late July whilst the return journey back to the breeding grounds takes place in April and May. During winter this species is almost entirely coastal, favouring rocky shores covered in seaweed. It is an opportunistic feeder, taking a wide range of food items including carrion, mussels, barnacles, crabs and insects.

Population Trends

The British non-breeding population of 49,550 represents approximately 33% of the East Atlantic Flyway population with 13% of the British population found within the SPA suite.

With at least 20% of the East Atlantic Flyway non-breeding population in the UK, this species qualifies as an 'Amber List' bird of conservation concern.

Based on peak counts the Wash has an estimated population of 1,088 individuals, which represents an approximately 2.2% of the British population. The nationally important Wash population has declined by 30% in the past 25 years and 52% since site-designation, triggering since site-designation High-Alert and long-term Medium-Alerts. Evidence suggests the proportion of the regional total held by the Wash has declined and a combination of factors is likely to be responsible for these declines.

Sensitivity

Threats from climate change include sea level rise and habitat shifts.

(xxviii) Little Tern

Designated sites with qualifying feature: Benacre to Easton Bevants SPA, Great Yarmouth North Denes SPA, Minsmere – Walberswick SPA, North Norfolk Coast SPA/Ramsar

Legal Protection

General legal protection is conferred by the Wildlife & Countryside Act 1981 (as amended) and extended protection is afforded by Annex 1 of the EC Wild Birds Directive and Schedule 1 of the Wildlife & Countryside Act 1981 (as amended).

Habitat

A tiny, narrow-winged tern, the little tern *Sturnula albifrons* is a migrant breeder and passage visitor in Britain. They arrive in Britain from their wintering grounds along the west coast of Africa in April and embark on the return journey in August and September. An exclusively marine foraging species it nests in well-camouflaged shallow scrapes on sand and shingle beaches, spits or inshore islets. Breeding activity peaks in mid-May and early June.

Population Trends

The British breeding population of 1,947 pairs represents approximately 8% of the biogeographic population. The UK SPA suite holds 67% of the British population. Benacre to Easton Bevents SPA (2.2%); Great Yarmouth North Denes SPA (9.2%); Minsmere – Walberswick SPA (1.2%) and North Norfolk Coast SPA/Ramsar (15.8%) hold 28.4% of the national population. Great Yarmouth North Denes SPA and the North Norfolk Coast SPA hold internationally important populations comprising 1.1% and 1.8% of the biogeographic population respectively.

The population has declined until the 1970s with some subsequent increases since then (Stroud *et al.*, 2001). With a moderate decline in the breeding population in the past 25 years, an unfavourable European conservation status and more than 50% of the UK population concentrated on 10 or fewer sites this species qualifies as an ‘Amber List’ bird of conservation concern.

Sensitivity

This species is threatened by habitat destruction from the development and industrial reclamation of coastal breeding habitats. It is also highly vulnerable to human disturbance at nesting sites and local egg collecting. Threats from climate change include sea level rise and higher storm frequency.

(xxix) Sandwich Tern

Designated sites with qualifying feature: North Norfolk Coast SPA/Ramsar

Legal Protection

General legal protection is conferred by the Wildlife & Countryside Act 1981 (as amended) and extended protection is afforded by Annex 1 of the EC Wild Birds Directive.

Habitat

A large, slender, short-tailed tern, the sandwich tern *Sterna sandvicensis* is a migrant breeder and passage visitor in Britain. Breeding birds arrive from their European and African wintering grounds in February. They breed in coastal areas mainly on shingle, sand and sometime rocky beaches.

Population Trends

The British breeding population of 10,536 pairs represents approximately 3% of the biogeographic population. The UK SPA suite holds 72% of the British population. The North Norfolk Coast holds internationally important numbers with 2.6% of the biogeographic population.

The breeding population can fluctuate widely and is thought to have declined by 11% since 1985-1988 (Dunn *et al.*, 2004). This is a species of European conservation concern and with at least 50% of the breeding population on 10 or fewer sites it qualifies as an 'Amber List' bird of conservation concern.

Sensitivity

This species is threatened by human disturbance especially near breeding colonies on beaches early in the breeding season, disturbance from coastal wind farms and the loss of breeding habitat from inundation, wind-blown sand and erosion. Climate change induced threats include higher storm frequency and sea-level rise.

(xxx) Common Tern

Designated sites with qualifying feature: Breydon Water SPA, North Norfolk Coast SPA/Ramsar

Legal Protection

General legal protection is conferred by the Wildlife & Countryside Act 1981 (as amended) and extended protection is afforded by Annex 1 of the EC Wild Birds Directive.

Habitat

A small-sized tern, the common tern *Sterna hirundo* is a migrant breeder and passage visitor in Britain. Breeding birds arrive from their West African wintering grounds in April. They breed in coastal areas mainly on small rocky islets, shingle beaches, sand-spits and dunes.

Population Trends

The British breeding population of 10,134 pairs represents approximately 10% of the biogeographic population. The UK SPA suite holds 46% of the British population. Breydon Water SPA and the North Norfolk Coast SPA hold 1.3% and 3.7% of the national population respectively.

In England there has been more than a 50% increase in the population between 1994-2006 (Raven *et al.*, 2007) although some colonies have been lost to habitat changes, e.g. coastal developments, and increased disturbance, especially recreational. This is a species of minimal conservation concern and is listed as a 'Green List' bird of conservation concern.

Sensitivity

This species is threatened by human disturbance especially near breeding colonies as well as flooding of nest sites as a result of naturally fluctuating water levels, habitat loss as a result of coastal development, erosion, vegetation overgrowth. Pollution and predation from North American Mink *Mustela vison* also poses a threat. Climate change induced threats include lower water tables and sea-level rise.

(xxxii) Nightjar

Designated sites with qualifying feature: Breckland SPA, Minsmere – Walberswick SPA

Legal Protection

General legal protection is conferred by the Wildlife & Countryside Act 1981 (as amended) and extended protection is afforded by Annex 1 of the EC Wild Birds Directive and Schedule 1 of the Wildlife & Countryside Act 1981 (as amended).

Habitat

Medium-sized, nocturnal and crepuscular, the nightjar *Caprimulgus europaeus* is a summer visitor to the UK from tropical Africa. Birds arrive on their heathland, moorland and young forestry plantation breeding grounds in late April and May. Eggs are laid in a bare earth 'scrape' between mid-May and mid-July. Return migration to Africa takes place between August and September.

Population Trends

The British breeding population is estimated at 3,400 males, representing 1.5% of the biogeographic population. The UK SPA suite holds 52.5% of the national population with the Breckland SPA and Minsmere-Walberswick SPA holding 12.2% and 0.7% respectively.

In the UK, their breeding range has contracted by over 50% in the last 50 years as a result of habitat loss and fragmentation, increased disturbance from humans and dogs, and the reduced availability of airborne insect prey. The bulk of the UK breeding population can now be found in southern England and Wales. As a result of this decline the nightjar is a red list bird of conservation concern and has a UK Biodiversity Action Plan (BAP) to reverse this trend.

The ground nesting habits of the species makes it especially prone to disturbance. In the lowland heaths of Dorset, disturbance resulted in a 60% failure rate in nesting nightjar with 93% of these being predated (Murison, 2002). Disturbance events that cause a nesting bird to be flushed off the nest will increase the visibility of the nest and therefore increases the chance of the nest being discovered by a predator.

Sensitivity

Their low flight behaviour during feeding makes them susceptible to impact with vehicles where roads are constructed through nightjar habitat.

(xxxiii) Woodlark

Designated sites with qualifying feature: Breckland SPA

Legal Protection

General legal protection is conferred by the Wildlife & Countryside Act 1981 (as amended) and extended protection is afforded by Annex 1 of the EC Wild Birds Directive.

Habitat

A dumpy, heavily streaked lark, the woodlark *Lullula arborea* is a migrant and resident breeder, and winter visitor in Britain. 90% of the British population breed on heathland or young forestry plantations (Wernham *et al.*, 2002) south of the Humber. Some are thought to be partially migratory but little is known about their winter movements. Birds seen in coastal areas between mid-March and May might involve birds of continental origin (Wernham *et al.*, 2002).

Population Trends

The British breeding population is estimated at 1426 to 1552 pairs. The UK SPA suite holds 73.8% of the national population with the Breckland SPA and the Minsmere-Walberswick SPA holding 28.7% and 1.3% respectively.

Woodlark populations have also fluctuated widely in the UK where the population has increased from an estimated 250 pairs in 1986 to around 1,500 pairs in 1997 (Wotton & Gillings 2000). As a result of a large contraction of the breeding range ($\geq 50\%$) in the past 25 years this species qualifies as a 'Red List' bird of conservation concern and has a UK biodiversity action plan.

Sensitivity

Its historical declines have been attributed to habitat loss and this coupled with severe winter conditions can have serious population effects. Research shows that recreational disturbance has a major effect on the woodlark population and any further impact on the population depends on both the numbers of people and their spatial distribution (Mallord *et al.*, 2007).

(xxxiii) Bearded Tit

Designated sites with qualifying feature: Minsmere – Walberswick SPA

Legal Protection

General legal protection is conferred by the Wildlife & Countryside Act 1981 (as amended) and extended protection is afforded by Schedule 1 of the act 1981.

Habitat

A small, long-tailed tit-like babbler, the bearded tit *Panurus biarmicus* is a resident breeder, passage and winter visitor to Britain. It is a reedbed specialist where it has spread from East Anglia north and west along the south coast. British birds are mainly sedentary although birds do move westwards and occupy inland sites in winter (Wernham *et al.*, 2002). Ringing recoveries also suggest immigration from the continent occurs occasionally (Wernham *et al.*, 2002).

Population Trends

The British population is estimated to be 504 to 559 pairs. From just a few pairs in the 1940s the Bearded reedling has increased markedly in Britain and following a period of mild winters numbers are reaching levels seen in the 1970s and early 1980s (Wernham *et al.*, 2002). With more than 50% of the breeding population concentrated on ten or fewer sites this species qualifies as an 'Amber List' bird of conservation concern.

Sensitivity

This species has suffered historically from habitat loss through the decline in reedbed management for thatching etc. Habitat loss and deterioration in coastal sites subjected to more frequent saltwater intrusion as sea levels rise is likely to pose an increasing threat. Furthermore, extended periods of winter flooding are known to cause severe over-winter mortality (Wilson & Peach, 2006). It's preference for extensive often inaccessible reedbeds means this species is less likely to be vulnerable disturbance.

3.3 Fish

(i) Brook Lamprey

Designated sites with qualifying feature: River Wensum SAC

Legal Protection

The brook lamprey *Lampetra planeri* is listed in annexes IIa and Va of the Habitats Directive, Appendix III of the Bern Convention, and as a Long List Species in the UK Biodiversity Action Plan.

Habitat

The brook lamprey is a non-migratory freshwater species, occurring in streams and occasionally in lakes in north-west Europe. Like other lamprey species, the brook lamprey requires clean gravel beds for spawning and soft marginal silt or sand for the ammocoete larvae. It spawns mostly in parts of the river where the current is not too strong.

Sensitivity

Lampreys are sensitive to the smothering of their spawning gravel and nursery silts for example through siltation and through abundant algae and bacteria caused by eutrophication, creating anoxic conditions (Maitland, 2003).

Dams and weirs can be obstacles to upstream migration and the success of local populations of lampreys. These include some aspects of fishery management, such as dredging to create fishing pools and the construction of croys, groynes, weirs, etc., to aid angling (Maitland PS (2003).

Channelisation can destroy lamprey habitat. The removal of areas of riffle and associated spawning gravels, and the dredging of essential nursery silt beds, may entirely eliminate lampreys from a river. Any other activities that cause artificial or extreme fluctuations in water level can result in an unstable habitat and disturb spawning gravels and nursery sites (Maitland PS (2003).

(ii) Bullhead

Designated sites with qualifying feature: River Wensum

Legal Protection

The bullhead *Cottus gobio* is listed under annex II of the EU Habitats Directive

Habitat

The bullhead is a small bottom-living fish that inhabits a variety of rivers, streams and stony lakes. It appears to favour fast-flowing, clear shallow water with a hard substrate (gravel/cobble/pebble) and is frequently found in the headwaters of upland streams. However, it also occurs in lowland situations on softer substrates so long as the water is well-oxygenated and there is sufficient cover. It is not found in badly polluted rivers (Tomlinson and Perrow, 2003).

Sensitivity

Bullhead are sensitive to habitat alteration. The siltation of river beds reduces the available habitat suitable for reproduction and shelter. Habitat may also be lost when rivers are dredged. Riparian tree removal has a negative impact on bullhead, either directly through habitat loss or indirectly through increased exposure to prey (Tomlinson and Perrow, 2003).

Any channelisation actions such as straightening, widening, deepening, removal or modification of natural features and isolating the channel from its floodplain (including lateral connections), is likely to be of detriment to bullhead populations. All such actions change natural flow regimes and sediment dynamics (Tomlinson and Perrow, 2003).

Any physical structures greater than 18 – 20 cm high can act as a barrier to bullhead, causing population isolation which can lead to local extinction. Bullhead may be adversely affected by the introduction of large numbers of fish and of non-native crayfish (Tomlinson and Perrow, 2003).

3.4 Invertebrates

(i) Narrow-Mouthed Whorl Snail

Designated sites with qualifying feature: Norfolk Valley Fens SAC; Minsmere-Walberswick Ramsar

Legal Protection

The narrow-mouthed whorl snail *Vertigo angustior* is nationally and globally threatened and is included on Annex II of the EC Habitats Directive. It is listed as Vulnerable on the IUCN/WCMC red list and Endangered on the GB Red List.

Habitat

The narrow-mouthed whorl snail is found primarily in marshy ground of high, even humidity, with flowing groundwater, but subject neither to deep or prolonged flooding nor to periodic desiccation. It requires unshaded conditions and lives amongst short vegetation, composed of grasses, mosses or low herbs, that is quickly warmed by the sun. It has been found in wet base-rich meadows, in coastal marshes, dune slacks and maritime turf, and in depressions within limestone pavement.

Sensitivity

Because of its specific microhabitat requirements, the species is often restricted to a narrow zone around wetlands, only a few metres wide. It is vulnerable to drainage or afforestation of the sites where it survives and is highly dependent on maintenance of existing local hydrological conditions. It is also vulnerable to reduced grazing pressure and physical disturbance.

(ii) Desmoulin's Whorl Snail

Designated sites with qualifying feature: Norfolk Valley Fens SAC; River Wensum SAC; The Broads SAC; Waveney and Little Ouse SAC.

Legal Protection

Desmoulin's whorl snail *Vertigo moulinsiana* is listed under Annex II of the European Union Habitats and Species Directive. It is a priority species in the UK Biodiversity Action Plan (HMSO 1996) and is listed in the British Red Data Book (Bratton 1991) as an RDB3 (Rare) species.

Habitat

The snail's basic requirement is swampy, usually unshaded ground with tall plants (which helps it survive winter floods). The water level must remain close to the surface so that the ground remains at least moist for most of the summer, although some seasonal drying appears to be acceptable. Relatively high groundwater also contributes to maintaining a high humidity in the vegetation.

Conversely, conditions must not become so wet that aquatic plants such as watercress (*Rorippa nasturtium-aquaticum*) and fool's watercress (*Apium nodiflorum*) become dominant. Permanent flooding of reedbeds may also be detrimental as there will be no litter layer in which the snails can over-winter, and no sites for laying eggs.

Sensitivity

The desmoulin's whorl snail requires high water levels, and is sensitive to changes in hydrology, such as water abstraction and general drainage of wetlands leading to reduced water tables and loss of periodic flushes.

Other factors leading to a reduction in wetland marsh habitat such as the canalisation of rivers, deepening of drainage channels may also be detrimental to this species.

Habitat loss can also result from land use change for example, from rough pasture or meadow to improved grassland, encroachment by scrub or alien plant species, which may result in too much shade and/or drying out of the habitat, and intensive grazing of fens or excessive poaching of ditch margins.

(iii) Fen Raft Spider

Designated sites with qualifying feature: Redgrave & South Lopham Fens Ramsar

Habitat

The fen raft spider *Dolomedes plantarius* is a wetland spider dependent on permanent, standing or slow moving water. They occur around the margins of pools that were created both by traditional peat digging for fuel peat and, more recently, by mechanical excavation to increase the availability of water to the spiders in dry summers

It is associated with nutrient-poor water of near neutral or alkaline pH. It lives on the surface of pools and ditches, and amongst emergent vegetation; typically it hunts from `perches` on stems emerging from the water, taking a wide range of invertebrate prey on or below the surface. Emergent, stiff-leaved vegetation in open, sunny conditions is also required for the construction of nursery webs in which the young are reared.

Sensitivity

The fen raft spider is most sensitive to surface water levels. Water abstraction for irrigation is one factor but more importantly drought can dry out some of the pools.

In this site the raft spiders are restricted to areas of the fen dominated by *Cladium mariscus*. Inappropriate management of the vegetation surrounding the ponds may have a negative effect on the raft spider populations.

This spider is also sensitive to loss of suitable wetland habitat and deterioration in water quality.

(iv) White-Clawed (or Atlantic Stream) Crayfish

Designated sites with qualifying feature: River Wensum SAC

Legal Protection

The white-clawed crayfish *Austropotamobius pallipes* is listed under annexes II and V of the EU Habitats Directive and Appendix II of the Bern Convention, and protected under Schedule 5 of the Wildlife and Countryside Act (1981). It is a priority species under the UK Biodiversity Action Plan, and a Species Action Plan has been prepared to encourage measures for its survival.

Habitat

The white-clawed crayfish lives in a diverse variety of clean aquatic habitats but especially favours hard-water streams and rivers (Calcium levels above 5 mg l⁻¹). It requires pH levels in the range 6.5 to 9.0.

Sensitivity

The white-clawed crayfish is susceptible to predation and competition by introduced species, particularly the North American signal crayfish (*Pacifastacus leniusculus*) (Holdich & Domaniewski 1995; Holdich *et al.*, 1995). Signal crayfish can also act as vectors of crayfish plague.

Aphanomycosis, or crayfish plague is caused by *Aphanomyces astaci* which is carried by North American species, particularly the signal crayfish. It is lethal to the white-clawed crayfish and causes mass mortality. The spores of the fungus can be carried by a variety of means: in water, on fish, in mud on boots, and on fishing equipment (Holdich, 2003).

Thelohaniasis, or porcelain disease is caused by *Thelohania contejeani*, a protozoan. It rarely causes mass mortality and may be present in 10% of a population without apparent harm, but problems may occur if a higher prevalence is reached (Holdich, 2003).

White-clawed crayfish are extremely vulnerable to pollution incidents, particularly those involving biocides and silage. Biocides entering a waterbody, particularly organophosphates and pyrethroids, can cause large mortalities. The use of sheep dip in areas where crayfish occur should be avoided (Holdich, 2003).

3.5 Mammals

(i) Barbastelle Bat

Designated sites with qualifying feature: Paston Great Barn SAC

Legal Protection

The barbastelle *Barbastella barbastellus* is one of the UK's rarest mammals and is one of the rarest bats in Western Europe. It is listed on Appendix II of the Bonn Convention (and its Agreement on the Conservation of Bats in Europe, 1994), Appendix II of the Bern Convention (and its appropriate Recommendations) and Annexes II and IV of the EC Habitats and Species Directive. It is protected under Schedule 2 of the Conservation (Natural Habitats, etc.) Regulations, 1994 (Regulation 38) and Schedule 5 of the Wildlife and Countryside Act 1981. The 1996 IUCN Red List of Threatened Animals classifies this species as Vulnerable.

Habitat

Barbastelle ecology is relatively poorly-known. In the UK it seems to prefer wooded river valleys and forages in mixed habitats, usually over water. Barbastelles appear to select cracks and crevices in wood for breeding, mostly in old or damaged trees, but cracks and crevices in the timbers of old buildings may also be used. Maternity colonies may move between suitable crevices within a small area, such as a piece of woodland or a complex of buildings. Caves and underground structures may be used for hibernation.

Sensitivity

The species is very sensitive to disturbance, together with the loss of roost-sites and food resources.

(ii) Otter

Designated sites with qualifying feature: The Broads SAC; The Wash and North Norfolk Coast SAC.

Legal Protection

The otter *Lutra lutra* is listed on Appendix 1 of CITES, Appendix II of the Bern Convention and Annexes II and IV of the Habitats Directive. It is protected under Schedule 5 of the WCA 1981 and Schedule 2 of the Conservation (Natural Habitats, etc.) Regulations, 1994 (Regulation 38). The European sub-species is also listed as globally threatened on the IUCN/WCMC RDL.

Habitat requirements

The otter is a semi-aquatic mammal, which occurs in a wide range of ecological conditions, including inland freshwater and coastal areas. Populations in coastal areas utilise shallow, inshore marine areas for feeding but also require fresh water for bathing and terrestrial areas for resting and breeding holts.

Coastal otter habitat ranges from sheltered wooded inlets to more open, low-lying coasts. Inland populations utilise a range of running and standing freshwaters. These must have an abundant supply of food (normally associated with high water quality), together with suitable habitat, such as vegetated river banks, islands, reedbeds and woodland, which are used for foraging, breeding and resting.

Sensitivity

Otters are most sensitive to factors relating to food supply such as the siltation of riverbeds, riparian habitat removal, toxic pollution and eutrophication, which can lead to declines in fish stocks (Chanin, 2003).

Direct effects of toxic pollution resulting in bioaccumulation are thought to coincide with declines in otter populations.

Otters are sensitive to obstructions which prevent their movement along the stream, especially if this results the otter crossing a road. Physical barriers such as weirs or piped water pose such a threat, as does artificially increased water velocity caused by channelisation.

There is also a concern with increasing numbers of otters killed in the roads.

(iii) Harbor/Common Seal

Designated sites with qualifying feature: The Wash and North Norfolk Coast SAC

Habitat

Common seals *Phoca vitulina* require suitable haul-out sites where they can rest, moult and give birth to and raise their pups. They seal live mainly along shorelines and in estuaries. It is commonly seen resting on sandbanks, easily accessible beaches, reefs and protected tidal rocks. They give birth to their pups in June and July and moult in August.

Common seals are predominantly opportunistic feeders. They feed on a variety of prey including sandeels, whitefish, flatfish, herring and sprat, octopus and squid. Their diet can also include invertebrates such as cephalopods (including octopus and squid), gastropods and crustaceans but is often dominated by just a few key species and varies both seasonally and from region to region.

Sensitivity

- Phocine distemper virus (PDV): the spread of PDV through contact with Weddel seals as a result of global warming is of concern. In 1988 the common seal population in The Wash declined by 50% due to this disease.
- Disturbance: from coastal development of harbour/dock areas and land bordering estuaries, limiting quiet haul out sites.
- Killing: shooting of seals around fishing nets and salmon traps.

3.6 Plants

(i) Fen Orchid

Designated sites with qualifying feature: The Broads SAC

Legal Protection

The fen orchid *Liparis loeselii* was formerly known from over 30 localities in the UK, but may now occur in only two sites in the Norfolk Broads and two dune systems in South Wales. Artificial propagation is now being used to increase the population in the wild. The fen orchid is listed on Annexes II(b) and IV(b) of the EC Habitats Directive and is protected under Schedule 4 of the Conservation (Natural Habitats, etc.) Regulations 1994 and Schedule 8 of the WCA 1981.

Habitat

The fen orchid occurs in fens and dune systems. A high summer water table and winter flooding appear to be important for the survival of this drought-sensitive species. In common with many other orchids, the fen orchid appears to rely on regular disturbance for its long-term survival at any one site

Sensitivity

The major factors leading to its widespread decline have been habitat loss and deterioration, with the cessation of peat-cutting in the fens being probably the most important contributory factor. Drainage and water abstraction have also contributed to its decline.

It is also at threat from the succession of the dune slack communities, with dune system over-stabilisation being a major reason for its decline.

(ii) Petalwort

Designated sites with qualifying feature: North Norfolk Coast SAC

Legal Protection

Petalwort *Petalophyllum ralfsii* is listed on Appendix I of the Bern Convention and Annex II of the Habitats Directive. It is also listed as *Vulnerable* on the GB Red List and is protected under Schedule 8 of the WCA 1981.

Habitat

Petalwort is a small thalloid liverwort usually found on damp, calcareous sand in dune slacks and machair, where it is wet or even subject to inundation in the winter. In dune slacks it often occurs in a zone around the margins of seasonally flooded basins or depressions.

Sensitivity

The UKBAP lists as the following as most important threats to this species:

- Loss of habitat due to development, dune stabilisation and natural succession;

- Drainage which leads to lower water tables and dissection.
- Recreation, physical disturbance is likely to be detrimental when the bryophyte crust on the surface is broken;
- Construction of golf courses, and;
- Collection of samples to botanical collection.

Table 3.1: Designated Species Sensitivities

Sensitivity	Nitrogen Deposition	Photochemical Oxidants (ozone)	Acidification	Dust	Direct toxicity	Eutrophication	Grazing	Agriculture	Water abstraction	Management techniques (cessation)	Erosion	Fragmentation	Physical modification	Water quality	Introduction of Non-native species	Recreational use	Coastal protection measures	Built development	Disease	Fisheries
Designated Species																				
Barbastelle bat													✓					✓		
Brown trout			✓			✓			✓				✓	✓						
Brook lamprey																				
Bullhead								✓	✓			✓	✓	✓	✓			✓		
Common seal																	✓		✓	✓
Desmoulin's whorl snail							✓	✓	✓				✓	✓	✓					
Fen orchid							✓	✓	✓								✓	✓		
Great crested newt			✓		✓			✓	✓			✓		✓				✓		
Fen raft spider								✓	✓	✓				✓				✓		
Otter	✓		✓		✓	✓						✓	✓	✓				✓		
Petalwort				✓		✓		✓	✓	✓				✓		✓				
Narrow-mouthed whorl snail							✓	✓	✓				✓	✓				✓		

Sensitivity	Nitrogen Deposition	Photochemical Oxidants (ozone)	Acidification	Dust	Direct toxicity	Eutrophication	Grazing	Agriculture	Water abstraction	Management techniques (cessation)	Erosion	Fragmentation	Physical modification	Water quality	Introduction of Non-native species	Recreational use	Coastal protection measures	Built development	Disease	Fisheries
White-clawed (or atlantic Stream) crayfish	✓				✓	✓						✓	✓	✓						✓
Bewick's swan				?	✓	✓	✓	✓	✓			✓	✓	✓		✓		✓		
Whooper swan				?	✓	✓	✓	✓	✓			✓	✓	✓		✓		✓		
Pink-footed goose				?	✓	✓	✓	✓	✓			✓	✓	✓		✓		✓		
Brant goose				?	✓	✓	✓	✓	✓			✓	✓	✓		✓		✓		
Wigeon				?	✓	✓	✓	✓	✓			✓	✓	✓		✓		✓		
Gadwall				?	✓	✓	✓	✓	✓			✓	✓	✓		✓		✓		
Eurasian teal				?	✓	✓	✓	✓	✓			✓	✓	✓		✓		✓		
Pintail				?	✓	✓	✓	✓	✓			✓	✓	✓		✓		✓		
Shoveler				?	✓		✓	✓	✓			✓	✓	✓		✓		✓		
Bittern			✓	?	✓	✓	✓	✓	✓	✓		✓	✓	✓		✓	✓	✓		
Marsh harrier				?	✓				✓			✓	✓	✓		✓	✓	✓		
Northern harrier				?	✓			✓				✓	✓	✓		✓		✓		
Avocet				?	✓				✓	✓	✓	✓	✓	✓		✓	✓	✓		

Sensitivity	Nitrogen Deposition	Photochemical Oxidants (ozone)	Acidification	Dust	Direct toxicity	Eutrophication	Grazing	Agriculture	Water abstraction	Management techniques (cessation)	Erosion	Fragmentation	Physical modification	Water quality	Introduction of Non-native species	Recreational use	Coastal protection measures	Built development	Disease	Fisheries
Stone-curlew	✓			?			✓	✓		✓		✓	✓			✓		✓		
Golden plover				?	✓		✓	✓	✓		✓	✓	✓			✓	✓	✓		
Lapwing				?	✓		✓	✓	✓		✓	✓	✓			✓	✓	✓		
Knot				?	✓		✓	✓	✓		✓	✓	✓			✓	✓	✓		
Ruff				?	✓		✓	✓	✓		✓	✓	✓			✓	✓	✓		
Little tern				?						✓	✓	✓	✓	✓	✓	✓	✓	✓		
Sandwich tern				?						✓	✓	✓	✓	✓	✓	✓	✓	✓		
Common tern				?						✓	✓	✓	✓	✓	✓	✓	✓	✓		
Nightjar				?						✓		✓	✓			✓		✓		
Woodlark				?						✓		✓	✓			✓		✓		
Bearded tit				?						✓		✓	✓					✓		

Table 3.2: Designated Habitat Sensitivities

Sensitivity	Nitrogen Deposition	Photochemical Oxidants (ozone)	Acidification	Dust	Direct toxicity	Eutrophication	Grazing	Agriculture	Water abstraction	Management techniques (cessation)	Erosion	Fragmentation	Physical modification	Water quality	Introduction of Non-native species	Recreational use	Coastal protection measures	Built development	Fisheries
Designated Habitat																			
Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i> , <i>Alnion incanae</i> , <i>Salicionalbae</i>)							✓		✓	✓			✓	✓	✓				
Alkaline fens	✓							✓	✓	✓									
Atlantic decalcified fixed dunes (<i>Calluno-Ulicetea</i>)	✓	✓		✓															
Atlantic salt meadows (<i>Glaucopuccinellietalia maritimae</i>)													✓		✓	✓		✓	✓
Calcareous fens with <i>Cladium mariscus</i> and species of the <i>Caricion davallianae</i>	✓							✓	✓	✓									
Coastal lagoons					✓	✓		✓	✓		✓			✓					
European dry heaths	✓	✓	✓	✓	✓			✓		✓		✓							
Embryonic shifting dunes	✓	✓							✓		✓					✓	✓	✓	
Fixed dunes with herbaceous vegetation (‘grey dunes’)	✓								✓	✓	✓					✓	✓	✓	
Hard oligo-mesotrophic waters with benthic vegetation of <i>Chara</i> spp.	✓		✓			✓													

Sensitivity	Nitrogen Deposition	Photochemical Oxidants (ozone)	Acidification	Dust	Direct toxicity	Eutrophication	Grazing	Agriculture	Water abstraction	Management techniques (cessation)	Erosion	Fragmentation	Physical modification	Water quality	Introduction of Non-native species	Recreational use	Coastal protection measures	Built development	Fisheries
Humid dune slacks	✓	✓							✓		✓					✓	✓	✓	
Inland dunes with open <i>Corynephorus</i> and <i>Agrostis</i> grasslands	✓	✓						✓	✓	✓						✓			
Large shallow inlets and bays					✓								✓						✓
Molinia meadows on calcareous, peaty or clayey-siltladen soils (<i>Molinia caerulea</i>)						✓			✓	✓									
Mediterranean and thermo-Atlantic halophilous scrubs (<i>Sarcocornetea fruticosi</i>)											✓		✓			✓			
Mudflats and sandflats not covered by seawater at low tide					✓	✓					✓		✓		✓			✓	
Natural eutrophic lakes with <i>Magnopotamion</i> or <i>Hydrocharition</i> -type vegetation			✓			✓			✓						✓	✓			
Northern Atlantic wet heaths with <i>Erica tetralix</i>	✓	✓		✓			✓												

Sensitivity	Nitrogen Deposition	Photochemical Oxidants (ozone)	Acidification	Dust	Direct toxicity	Eutrophication	Grazing	Agriculture	Water abstraction	Management techniques (cessation)	Erosion	Fragmentation	Physical modification	Water quality	Introduction of Non-native species	Recreational use	Coastal protection measures	Built development	Fisheries
Perennial Vegetation of Stony Banks									✓	✓	✓					✓	✓		
Reefs																			✓
<i>Salicornia</i> and other annuals colonising mud and sand													✓		✓	✓		✓	✓
Sandbanks which are slightly covered by sea water all the time											✓	✓							
Semi-natural dry grasslands and scrubland facies: on calcareous substrates (<i>Festuco-Brometalia</i>)	✓	✓		✓			✓	✓							✓				
Shifting dunes along the shoreline with <i>Ammophila arenaria</i> ("white dunes")	✓	✓							✓		✓					✓	✓	✓	
Transition mires and quaking bogs	✓	✓		✓	✓											✓		✓	
Vegetated sea cliffs of the Atlantic and Baltic coasts	✓	✓						✓			✓						✓	✓	
Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitriche-Batrachion</i> vegetation	✓		✓			✓			✓				✓	✓					

4 References

- Baker, H., Stroud, D.A., Aebischer, N.J., Cranswick, P.A., Gregory, R.D., McSorley, C.A., Noble, D.G. & Rehfisch, M.M. (2006) *Population estimates of birds in Great Britain*. British Birds 99: 25-44.
- Banks, A.N., Collier, M.P., Austin, G.E., Hearn, R.D. & Musgrove, A.J. (2006) *Waterbirds in the UK 2004/05: The Wetland Bird Survey*. BTO/WWT/RSPB/JNCC, Thetford.
- Banner, A. and Schaller, S. (2001) *Gulf of Maine Program: Northern Harrier Habitat Model*. Available at: www.fws.gov/r5gomp/gom/habitatstudy/metadata/northern_harrier_model.htm (Accessed on: 8 April 2009).
- Chanin, P. (2003) *Ecology of the European Otter*. Conserving Natura 2000. Rivers Ecology Series No. 10. English Nature, Peterborough. Available at: <http://www.english-nature.org.uk/LIFEinUKRivers/species/otter.pdf> (Accessed on: 8 April 2009).
- Cramp, S. & Simmons, K.E.L. (eds.) (2004) *BWPI: Birds of the Western Palearctic interactive* (DVD-ROM). BirdGuides Ltd, Sheffield.
- Dunn, T.E., Mitchell, P.I., Newton, S. & Ratcliffe, N. (2004) *Seabird Populations of Britain and Ireland*. A&C Black Publishers Ltd., London. In Joint Nature Conservation Committee: *Seabird 2000*. Available at: <http://www.jncc.gov.uk/page-1548> (Accessed on: 8 April 2009).
- English Nature (2001) *Lowland calcareous grassland: a scarce and special habitat*. English Nature, Peterborough.
- Environment Agency (2006) *The Broadlands Rivers Catchment Abstraction Management Strategy March 2006*. Available at: <http://publications.environment-agency.gov.uk/pdf/GEAN0306BKIZ-e-e.pdf> (Accessed on: 8 April 2009).
- Gregory, R.D., Wilkinson, N.I., Noble, D.G., Robinson, J.A., Brown, A.F., Hughes, J., Procter, D., Gibbons, D.W. & Galbraith, C.A. (2002) *The population status of birds in the United Kingdom, Channel Islands and Isle of Man: an analysis of conservation concern 2002-2007*. British Birds 95: 410-448.
- Hardey, J., Crick, H., Wernham, C., Riley, H., Etheridge, B. & Thompson, D. (2007) *Raptors: a field guide to survey and monitoring*. The Stationary Office, Edinburgh.
- Hatton-Ellis TW & Grieve N (2003) *Ecology of Watercourses Characterised by Ranunculion fluitantis and Callitricho-Batrachion Vegetation*. Conserving Natura 2000 Rivers Ecology Series No. 11. English Nature, Peterborough.
- Hirvonen, H. (2001) *Impacts of highway construction and traffic on a wetland bird community*. In: *Proceedings of the 2001 International Conference on Ecology and Transportation*, Eds. Irwin, C.L., Garrett, P., McDermott, K.P. Center for Transportation and the Environment, North Carolina State University, Raleigh, NC: pp. 369-372. Available at: <http://repositories.cdlib.org/jmie/roadeco/Hirvonen2001a> (Accessed on: 8 April 2009).
- Holden, P. & Cleeves, T. (2006) *RSPB Handbook of British Birds*. Christopher Helm, London.

Holdich, D.M. & Domaniewski, J.C.J. (1995) *Studies on a mixed population of the crayfish Austropotamobius pallipes and Pacifastacus leniusculus in England*. *Freshwater Crayfish*, 10, 37-45.

Holdich, D.M., Rogers, W.D., Reader, J.P. & Harlioglu, M.M. (1995). *Interactions between three species of freshwater crayfish (Austropotamobius pallipes, Astacus leptodactylus and Pacifastacus leniusculus)*. *Freshwater Crayfish* 10, 46–56.

Holdich, D. (2003) *Ecology of the White-clawed Crayfish*. Conserving Natura 2000 Rivers Ecology Series No. 1. English Nature, Peterborough. Available at: <http://www.english-nature.org.uk/LIFEinUKRivers/species/crayfish.pdf> (Accessed on: 8 April 2009)

JNCC (2005) *Common Standards Monitoring Guidance for Marine Mammals*. Joint Nature Conservation Committee. Available at: <http://www.jncc.gov.uk/page-2228> (Accessed on: 8 April 2009).

Killeen, I.J. (2003) *Ecology of Desmoulin's Whorl Snail*. Conserving Natura 2000 Rivers Ecology Series No. 6. English Nature, Peterborough. Available at: <http://www.english-nature.org.uk/LIFEinUKRivers/species/snail.pdf> (Accessed on: 8 April 2009).

Land, R. (2005) *Making Space for Wildlife and People*. Norfolk Wildlife Trust for the Norfolk Biodiversity Partnership.

Land, R. (2006) *Report of Ecological Network Mapping Project for Norfolk*. Norfolk Wildlife Trust for the Norfolk Biodiversity Partnership.

Maclean, I.M.D. & Austin, G.E. (2006) *WeBS Alerts 2004/2005: Changes in numbers of wintering waterbirds in the United Kingdom, its Constituent Countries, Special Protection Areas (SPAs) and Sites of Special Scientific Interest (SSSIs)*. BTO Research Report No. 458 to the WeBS partnership. BTO, Thetford. Available at: <http://www.bto.org/webs/alerts/alerts/index.htm> (Accessed on: 8 April 2009).

Maitland PS (2003) *Ecology of the River, Brook and Sea Lamprey*. Conserving Natura 2000 Rivers Ecology Series No. 5. English Nature, Peterborough. Available at: <http://www.english-nature.org.uk/LIFEinUKRivers/species/lamprey.pdf> (Accessed on: 8 April 2009)

Mallord, J.W., Brown, A.F. & Sutherland, W.J. (2007) *How perception and density-dependence affect breeding Woodlarks Lullula arborea*. *Ibis* 149 (Suppl. 1): 15.

Moyes, S. & Bell, H. (2008) *Marsh Harriers on the Tay in 2006*. Available at: <http://www.roydennis.org/Marsh%20Harrier%20Migration%202006.htm> (Accessed: 8 April 2009).

Murison, G. (2002) *The impact of human disturbance on the breeding success of nightjar Caprimulgus europaeus on heathlands in south Dorset, England*. Natural England Research Report 483.

Raven, M.J., Noble, D.G. & Baillie, S.R. (2007) *The Breeding Bird Survey 2006*. BTO Research Report 471. British Trust for Ornithology, Thetford.

Robinson, R.A. (2005) *BirdFacts: species profiles of birds occurring in Britain and Ireland*. BTO Research Report 407, BTO, Thetford. Available at: <http://www.bto.org/birdfacts> (Accessed on: 8 April 2009).

RSPB (2007) *Bird guide*. Available at: <http://www.rspb.org.uk/wildlife/birdguide/index.asp> (Accessed on: 8 April 2009).

SCOS (2004) *Scientific Advice on Matters Related to the Management of Seal Populations: 2004 UK Special Committee on Seals, Advice 2004*. Sea Mammal Research Unit, School of Biology, University of St Andrews. Available at: <http://www.smru.st-andrews.ac.uk/pageset.aspx?psr=411> (Accessed: 8 April 2009).

Stroud, D.A., Chambers, D., Cook, S., Buxton, N., Fraser, B., Clement, P., Lewis, P., McLean, I., Baker, H. & Whitehead, S. (eds). (2001) *The UK SPA network: its scope and content*. JNCC, Peterborough.

Stroud, D.A., Davidson, N.C., West, R., Scott, D.A., Haanstra, L., Thorup, O., Ganter, B. & Delany, S. (compilers) on behalf of the International Wader Study Group (2004) *Status of migratory wader populations in Africa and Western Eurasia in the 1990s*. International Wader Studies 15: 1-259.

Sutherland, W. L. & Hill, D. A. (1995) *Managing Habitats for Conservation*. Cambridge University Press, Cambridge. 399 pp.

Tomlinson, M.L. & Perrow, M.R. (2003) *Ecology of the Bullhead*. Conserving Natura 2000 Rivers Ecology Series No. 4. English Nature, Peterborough.

UKBAP (2008) *UK Biodiversity Action Plan*. Available at: <http://www.ukbap.org.uk/> (Accessed: 8 April 2009).

Wernham, C.V., Toms, M.P., Marchant, J.H., Clark, J.A., Siriwardena, G.M. & Baillie, S.R. (eds). (2002) *The Migration Atlas: movements of the birds of Britain and Ireland*. T. & A.D. Poyser, London.

Wilson, J. & Peach, W. (2006) *Impact of an exceptional winter flood on the population dynamics of bearded tits (*Panurus biarmicus*)*. Animal Conservation 9(4): 463-473.

Wotton, S., Lodge, C., Lewis, B., Schmitt, S., Kellet, K., Gregory, R. & Brown, A. (2008) *Bittern *Botaurus stellaris* monitoring in the UK: Summary of the 2008 season*. Available at: http://www.rspb.org.uk/Images/bitternsummary2008_tcm9-199951.pdf (Accessed: 8 April 2009).

Wotton, S.R. & Gillings, S. (2000) *The status of breeding Woodlarks *Lullula arborea* in Britain in 1997*. Bird Study 47: 212-224.

Appendix A Designated Sites Maps

- For Maps please see separate file

Appendix B Designated Sites Citations



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cSAC: The Broads
SPA: Broadland
Component SSSI: Alderfen Broad

Conservation objectives for the European Interest on the SSSI

The conservation objectives for the European interest on the SSSI are:

to maintain*, in favourable condition, the:

- Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior*.
- Transition mires and quaking bogs.

to maintain*, in favourable condition, the habitats for the population of:

- Desmoulin's whorl snail (*Vertigo moulinsiana*).
- Otter (*Lutra lutra*).

to maintain*, in favourable condition, the habitats for the populations of Annex1 bird species⁺ of European importance with particular reference to:

- open water
- swamp
- fen

+Bittern, Marsh harrier, Hen harrier.

to maintain*, in favourable condition, the habitats for the populations of migratory bird species⁺ of European importance with particular reference to:

- open water
- swamp
- fen

+ Gadwall and Shoveler.

to maintain*, in favourable condition, the habitats of the populations of waterfowl that contribute to the wintering waterfowl assemblage of European importance, with particular reference to,

- open water
- swamp and fen.

* maintenance implies restoration if the feature is not currently in favourable condition.

The Conservation Objectives for The Broads candidate Special Area of Conservation and Broadland Special Protection Area are, in accordance with para C 10 of PPG 9, the reasons for which the cSAC was designated and the SPA classified. The entry of 30 January 1996 on the Register of European Sites gives the reasons for which the SPA was classified.

The **Broads cSAC** and **Broadland SPA** includes land within: Alderfen Broad SSSI, Ant Broads and Marshes SSSI, Barnby Broad and Marshes SSSI, Broad Fen, Dilham SSSI, Bure Broads and Marshes SSSI, Burgh Common and Muckfleet Marshes SSSI, Calthorpe Broad SSSI, Cantley Marshes SSSI, Crostwick Marsh SSSI, Decoy Carr, Acle SSSI, Ducan's Marsh, Claxton SSSI, Geldeston Meadows SSSI, Hall Farm Fen, Hemsby SSSI, Halvergate Marshes SSSI, Hardley Flood SSSI, Limpenhoe Meadows SSSI, Ludham-Potter Heigham Marshes SSSI, Poplar Farm Meadows, Langley SSSI, Priors Meadows, Hickling SSSI, Shallam Dyke Marshes, Thurne SSSI, Smallburgh Fen SSSI, Sprat's Water and Marshes, Carlton Colville SSSI, Stanley and Alder Carrs, Aldeby SSSI, Upper Thurne Broads and Marshes SSSI, Upton Broads and Marshes SSSI and Yare Broads and Marshes SSSI.

The **Broads cSAC** additionally includes land within: Damgate Marshes, Acle SSSI and Trinity Broads SSSI.

Favourable Condition Table for Alderfen Broad SSSI

The Favourable Condition Table will be used by English Nature and other relevant authorities to determine if a site is in favourable condition. Favourable condition is achieved when the targets given below are met.

The favourable condition table should inform the scope and nature of any 'appropriate assessment' under the Habitats Regulations, but an appropriate assessment will also require consideration of issues specific to the individual plan or project. The favourable condition table does not by itself provide a comprehensive basis on which to assess plans and projects as required under Regulations 20-21, 24, 48-50 and 54 - 85. The scope and content of an appropriate assessment will depend upon the location, size and significance of the proposed project. English Nature will advise on a case by case basis.

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Annual counts for qualifying bird species will be used by English Nature, in the context of five year peak means, together with available information on UK population and distribution trends, to assess whether the SPA is continuing to make an appropriate contribution to the Favourable Conservation Status of the species across Europe.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Transition mires and quaking bogs.	NVC type M5	Extent	Area (ha), measured periodically.	Maintain type and extent of NVC communities which are optimal for the interest feature. No significant decrease from reference level.	Map extent and position of main NVC communities, monitor every 5 years. Reference level to be determined.
Floodplain/valley mire (E32)		Sward structure	Extent of bare mud or peat visible without disturbing vegetation	No more than 5% of mire area	
		Sward composition	Floristic quality of <i>Carex rostrata-Sphagnum squarrosum</i> mire (M5) through the abundance of 'typical' species	Within the area occupied by target communities, the eponymous species and others of constancy V and IV should be abundant.	
			Frequency or cover of tree / scrub spp.	No more than 5% cover, if in discrete stands, or no more than occasional throughout the sward	It is acceptable to have component wet woodland communities and so the presence of scattered or weak scrub is not always a negative feature.
		Water quality	Maintenance of trophic status	Maintain the raft characteristics. Exclude surface and drainage water likely to increase fertility.	The balance between seepage and surface water must be maintained, and attention given to any differences of base-richness between competing sources of water.
		Water quantity	Stable groundwater	Water levels which does not fluctuate more than 30cm annually.	Install dipwells and measure at least bimonthly. Control of the range of vertical water level fluctuation may be important to maintain the delicate balance between base-rich and base-poor conditions.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		Physical condition of raft	Degree of movement capable by raft.	Presence of raft that trembles when walked upon.	Check for evidence of trophic change.
		Rare species	Maintain or enhance populations of special or rare plant (and animal) species	Species to be determined.	Identify special species and seek guidance in defining measures. Reference levels to be determined.
Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> Semi-natural woodland	Parts of NVC types W2 and W5 and 6)	Extent	Extent/location of stands	No loss of ancient semi-natural stands At least current area of recent semi-natural stands maintained, although their location may alter. At least the area of ancient woodland retained	* Stand loss due to natural processes eg in minimum intervention stands may be acceptable. * A high proportion of this type of woodland may be recent and hence a dynamic interchange with open wet communities may occur. * Stand destruction may occur if the understorey and ground flora are irretrievably damaged even if the canopy remains intact. * Loss = 0.5 ha or 0.5% of the stand area, whichever is the smaller. * 20% canopy cover is conventionally taken as the lower limit for an area to be considered as woodland. Stands of willow scrub may pose difficulties of definition. * Area and location of stands may be assessed remotely or by site visit.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		3. Regeneration potential	Successful establishment of young stems in gaps or on the edge of a stand	<p>* Signs of seedlings growing through to saplings to young trees at sufficient density to maintain canopy density over a 10 yr period (or equivalent regrowth from coppice stumps).</p> <p>* No planting in stands .</p>	<p>* A proportion of gaps at any one time may develop into permanent open space; equally some current permanent open space/glades may in time regenerate to closed canopy.</p> <p>* Regeneration may often occur on the edges of stands rather than in gaps within it.</p> <p>* In coppice most of the regeneration will be as stump regrowth. See JNCC Guidance Note on likely desirable levels of regeneration.</p> <p>* The minimum level of regeneration to be acceptable from a nature conservation viewpoint is likely to be much less than that needed where wood production is also an objective.</p> <p>* Assess this attribute by walking through the wood in spring/summer.</p>

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		4. Composition	Cover of native versus non-native species (all layers) Death, destruction or replacement of native woodland species through effects of non-native fauna or external unnatural factors	<ul style="list-style-type: none"> * At least the current level of site-native species maintained. * At least 90% of cover in any one layer of site-native or acceptable naturalised species. * Death, destruction or replacement of native woodland species through effects of introduced fauna or other external unnatural factors not more than 10% by number or area in a five year period. 	<ul style="list-style-type: none"> * In sites where there might be uncertainty as to what counts as site-native or as an acceptable naturalised species this must be made clear (eg the position of poplar). * Where cover in any one layer is less than 100% then the 90% target applies to the area actually covered by that layer. * Factors leading to the death or replacement of woodland species could include pollution, including eutrophication from adjacent farmland; new diseases (eg alder dieback). * Damage to species by non-native species that does not lead to their death or replacement by non woodland species (eg damage from squirrels to trees that non-the -less survive) is not necessarily unacceptable in nature conservation terms. * Excessive browsing/grazing by even native ungulates may be considered an unnatural external factor where it leads to undesirable shifts in the composition/structure of the stand, although this may be picked up by attributes 2 or 5 anyway. * Assess this attribute by a walk through the site.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		5. Species, habitats, structures characteristic of the site.	Ground flora type Distinctive and desirable elements for a given site eg. locally uncommon species such as <i>Carex elata</i> ; veteran trees or rich invertebrate assemblages. Patches of associated habitats and transitions eg to ash wood, open fen and open water	* 80% of ground flora cover referable to relevant NVC wet woodland community (W 2, 5 and 6) * Distinctive elements maintained at current levels and in current locations (where appropriate). * Patches and transitions maintained in extent and where appropriate location.	* Changes leading to these targets not being met may be acceptable where this is due to natural processes. * Distinctive elements and patches should be marked on maps for ease of checking in the field wherever possible. * If there are species groups/assemblages that cannot be assessed directly on a general site visit then surrogate features should be given where possible, eg dead wood concentrations for associated invertebrates.
Broad	Otter <i>Lutra lutra</i>	Water quality	EA scale	"Good", with no pollution incidents	Refer to Environment Agency for data
		Flow rate	Mean annual flow rate	No reduction attributable to increased abstraction.	Data from Environment Agency
		Site integrity	Total area	No reduction of fragmentation of area	
		Fish stocks	EA assessment	Fish stocks appropriate to the nutrient status of the broad. No significant decline in fish biomass or species diversity	Refer to Environment Agency for sample data
		Disturbance	Extent of public access to river	No significant change to river or bankside usage; no significant development	

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		Bankside cover	Proportion of bank lined with trees, scrub or other thick cover	No overall permanent decrease	Some change acceptable as long as it is appropriately mitigated
		Presence of otters	Signs of otters	Signs of otters found at least once per year	Use data from national or county surveys
Broad and fen	Desmoulin's whorl snail <i>Vertigo moulinsiana</i>	structure and composition of marginal vegetation	Length or area of stand of appropriate vegetation	The extent of suitable habitat should be maintained, compared to the extent on a baseline map, over appropriate area of fen or broad margin [area of fen, swamp or broad, and number of sample stretches to be decided locally]. Suitable vegetation will be dense, unbroken stands of <i>Glyceria maxima</i> , <i>Carex riparia</i> , <i>C. acutiformis</i> , <i>C. paniculata</i> , <i>Cladium mariscus</i> and/or sparse <i>Phragmites</i> .	It is expected that traditional and accepted lake management will cause local deterioration of some stands but the aim is to ensure that habitat in appropriate condition is present at frequent intervals along a lake corridor. The snail appears to be able to colonise new adjacent stands rapidly, and closely spaced, fragmented patches may provide acceptable conditions for this species. Habitat should be a suitable size and linked to lakes, fens and smaller waterways hydrologically and not separated by barriers such as mown paths.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Broad and fens		water table	1. depth below ground level; 2 & 3. vegetation indicators of drying out.	1. Water table must be close to the surface so that the ground remains squelchy all year, i.e. never drying out, so that, even in high summer, water will rise when the soil is trodden. Winter flooding is permissible. 2. Not more than 10% (occasional on the DAFOR scale) replacement of preferred dominant species by dense tall reed or by plants of drier conditions, e.g. <i>Urtica dioica</i> , <i>Epilobium hirsutum</i> , and low grasses invading the litter layer, within pre-selected stands (as selected for	<i>V. moulinsiana</i> requires highly humid conditions which are met by a high water table below the stands of vegetation in which it lives. Unfavourably wet conditions can result from prolonged flooding in summer or water penning being set too high. Current research (2000-01) will refine acceptable limits and measures for soil moisture. measuring extent). 3. Not more than 10% (occasional on the DAFOR scale) replacement of tall monocotyledons by plants preferring wetter conditions, e.g. <i>Rorippa nasturtium-aquaticum</i> , <i>Apium nodiflorum</i> and <i>Berula erecta</i> .
Broad and fen		vegetation height	height of bulk of the vegetation	Average height of the stands no less than 50 cm.	<i>V. moulinsiana</i> requires tall leaves on which it lives most of the year. Heavy grazing and mowing may be detrimental if it removes most taller clumps.
Broad and fen		shading by shrubs and trees (e.g. willow, alder)	proportion of habitat	Less than 10% increase in area of shade, compared to extent on the baseline map.	

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Broad and fen		water quality	<p>Biological class - Environment Agency's General Quality Assessment scheme. Assess every 5 years</p> <p>River Ecosystem Class. Assess against Environment Agency monitoring results.</p> <p>Suspended solids</p>	<p>>='b' In addition, no drop in class from exiting situation.</p> <p>>= RE3 In addition, no drop in class from exiting situation.</p>	<p>Although the snail lives out of the water, water quality may influence vegetation structure and perhaps the microflora living on the leaf surfaces where the snail feeds, and chemical quality may directly affect the snail when it is submerged during floods. Future experience and research may indicate that these variables are inapplicable to <i>V. moulinsiana</i>.</p> <p>No values are given for suspended solids as this pollutant has no direct influence on the condition of the habitat for moulinsiana.</p> <p>No monitoring targets are set for hardness but assessments for projects must take account of the snail's need for water whose hardness must not fall below value expected for the catchment.</p>
All habitats: Swamp, Marginal and Inundation, Standing Water	Annex 1 species of European importance and waterfowl assemblage including migratory species of European and national importance.	Extent of habitat.	Area (ha), measured periodically (frequency to be determined).	No significant decrease from reference level.	<p>For all habitats for all qualifying species.</p> <p>Methodology for assessing target to be determined. Reference level to be determined.</p>
		Disturbance in roosting and feeding areas	Reduction or displacement of birds, measured periodically (frequency to be determined).	No significant displacement of birds attributable to human disturbance in relation to reference level.	<p>All qualifying breeding and wintering annex 1 and migratory species.</p> <p>Methodology for assessing target to be determined. Reference level to be determined.</p>

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
All habitats: Swamp, Marginal and Inundation, Standing Water	Annex 1 species of European importance.	Food Availability	Abundance of live mammals and birds, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of food species year round in relation to reference level.	Small-medium sized mammals (voles, mice, rabbits) and birds (pipits to ducks) are important prey in the breeding season for marsh harriers and during the winter for hen harriers. Methodology for assessing target to be determined. Reference level to be determined.
Swamp, Marginal and Inundation	Annex 1 species of European importance.	Landscape	Large, unbroken expanse of emergent vegetation (nesting, feeding, concealment), measured periodically (frequency to be determined).	No significant reduction in expanse of emergent vegetation year round.	Bittern and Marsh Harrier require continuous reed over >20ha. Methodology for assessing target to be determined.
Swamp, Marginal and inundation	Annex 1 species of European importance.	Water depth	Shallow water within emergent vegetation plus frequent deep pools and channels (feeding), measured periodically (frequency to be determined).	Water depth and extent of shallows within tall fen should not deviate significantly with no significant reduction in the presence of deep pools and channels year round.	Bittern and marsh harrier require water throughout the tall fen of 10-30cm, and bittern also require pools 2-4m deep. Channels for bittern should be up to 2.5m deep, consisting of a deep central channel (>1.5m) and 1m deep/5m wide shallow margin on at least one side. Methodology for assessing target to be determined.
Swamp, Marginal and Inundation	Annex 1 species of European importance.	Hydrology flow	Stable Water levels, measured periodically (frequency to be determined).	Water levels should not deviate significantly during the breeding season.	<10cm fluctuation is required during the breeding season for Marsh Harrier. Methodology for assessing target to be determined.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Swamp, Marginal and Inundation Standing Water	Annex 1 species of European importance.	Food Availability	Presence and abundance of fish and amphibians, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of prey species year round, in relation to reference level.	Eel, rudd, roach of 6-35cm and frogs/toads are important for Bittern. Methodology for assessing target to be determined. Reference level to be determined.
Standing Water	Migratory species of European and national importance.	Food Availability	Presence and abundance of aquatic plants, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of food species during the winter season in relation to reference level.	<i>Glyceria fluitans</i> , <i>Agrostis stolonifera</i> , <i>Chara</i> , <i>Potamogeton</i> and <i>Ceratophyllum spp</i> for gadwall. <i>Scirpus</i> , <i>Eleocharis</i> , <i>Carex</i> , <i>Potamogeton</i> and <i>Glyceria</i> for shoveler. <i>Chara</i> , <i>Nitella</i> and <i>Potamogeton spp.</i> are important for pochard and tufted duck. <i>Chara</i> , <i>Cladophora</i> , <i>Potamogeton</i> , <i>Ruppia</i> , <i>Ranunculus</i> and <i>Elodea</i> are important for Coot. Methodology for assessing target to be determined. Reference level to be determined.
Standing Water	Nationally important migratory species.	Food Availability	Presence and abundance of seed bearing plants, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of food species during the winter season in relation to reference level.	<i>Polygonum</i> , <i>Eleocharis</i> , <i>Rumex</i> and <i>Ranunculus</i> are important for Teal. Methodology for assessing target to be determined. Reference level to be determined.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Standing Water	Migratory species of European and national importance.	Food availability	Presence and abundance of aquatic invertebrates, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of prey species during the winter season in relation to reference level.	Hydrobia, crustaceans, caddisflies, diptera and beetles are important for shoveler. Hydrobia, flies, caddisfly, beetles and bugs are important for teal. Methodology for assessing target to be determined. Reference level to be determined.
Standing Water	Nationally important migratory species.	Food availability	Presence and abundance benthic invertebrates, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of prey species during the winter season in relation to reference level.	Chironomid larvae are important for pochard. <i>Dreissena polymorpha</i> , chironomid larvae, <i>Gammarus</i> and <i>Hydrobia</i> are important for tufted duck. Methodology for assessing target to be determined. Reference level to be determined.
Standing Water	Nationally important migratory species.	Food availability	Presence and abundance of surface and benthic invertebrates, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of prey species during the winter season in relation to reference level.	Mytilus, <i>Dreissena polymorpha</i> and caddis-fly larvae are important for coot. Methodology for assessing target to be determined. Reference level to be determined.
Standing Water	Nationally important migratory species.	Food availability	Presence and abundance of fish, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of prey species during the winter season in relation to reference level.	Fish of 10-25 cm are important for cormorant. Fish of 3-21 cm are important for great crested grebe. Methodology for assessing target to be determined. Reference level to be determined.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Standing Water	Migratory species of European and national importance.	Water depth	Areas of shallow medium and deep water (feeding), measured periodically (frequency to be determined).	Water depths should not deviate significantly during the winter season.	<p>Cormorant require a water depth of 2-10m.</p> <p>Great crested grebe require a water depth of 1-3m.</p> <p>Gadwall require a water depth of <25cm. A kleptoparasitic relationship with Coot can allow Gadwall to potentially exploit deeper areas up to 2m in depth.</p> <p>Shoveler and teal require a water depth of <30cm.</p> <p>Coot require a water depth of 0.5-2m.</p> <p>Pochard and tufted duck require a water depth of 2-5m.</p> <p>Methodology for assessing target to be determined.</p>
Standing Water	Annex 1 species of European importance.	Water area	Large open areas of water(feeding), measured periodically (frequency to be determined).	No significant reduction in the area of open water for feeding year round.	<p>Bittern require one or more freshwater pools of >0.5ha not exceeding 20% of open fen area.</p> <p>Methodology for assessing target to be determined.</p>

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Standing Water	Migratory species of national importance.	Water area	Large open areas of water(feeding, roosting), measured periodically (frequency to be determined).	No significant reduction in the area of open water for feeding and roosting during the winter season.	<p>Cormorant require one or more fresh waters of >20ha.</p> <p>Pochard require one or more fresh waters of >6ha.</p> <p>Tufted duck require one or more freshwaters of >5ha.</p> <p>Coot require one or more freshwaters of >2ha.</p> <p>Great crested grebe require one or more freshwaters of >1ha.</p> <p>Methodology for assessing target to be determined.</p>



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cSAC: The Broads
SPA: Broadland
Component SSSI: Ant Broads and Marshes

Conservation objectives for the European Interest on the SSSI

The conservation objectives for the European interest on the SSSI are:

to maintain*, in favourable condition, the:

- Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior*.
- Calcareous fens with *Cladium mariscus* and species of the *Carex davallianae*.
- Natural eutrophic lakes with *Magnopotamion* or *Hydrocharition*-type vegetation.
- Transition mires and quaking bogs.
- Hard oligo-mesotrophic waters with benthic vegetation of *Chara* spp..
- *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*).

to maintain*, in favourable condition, the habitats for the population of:

- Fen orchid (*Liparis loeselii*).
- Desmoulin's whorl snail (*Vertigo moulinsiana*).
- Otter (*Lutra lutra*).

to maintain*, in favourable condition, the habitats for the populations of Annex1 bird species⁺ of European importance with particular reference to:

- open water
- swamp
- fen
- reedbed
- fen meadow with ditches and water bodies.

+Bittern, Marsh harrier, Hen harrier.

to maintain*, in favourable condition, the habitats for the populations of migratory bird species⁺ of European importance with particular reference to:

- open water
- swamp
- fen
- reedbed
- fen meadow with ditches and water bodies.

+ Gadwall and Shoveler.

to maintain*, in favourable condition, the habitats of the populations of waterfowl that contribute to the wintering waterfowl assemblage of European importance, with particular reference to,

- open water
- wet woodland
- swamp and fen
- fen meadow with ditches
- ter bodies.

* maintenance implies restoration if the feature is not currently in favourable condition.

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The **Broads cSAC** additionally includes land within: Damgate Marshes, Acle SSSI and Trinity Broads SSSI.

Favourable Condition Table for Ant Broads and Marshes SSSI

The Favourable Condition Table will be used by English Nature and other relevant authorities to determine if a site is in favourable condition. Favourable condition is achieved when the targets given below are met.

The favourable condition table should inform the scope and nature of any 'appropriate assessment' under the Habitats Regulations, but an appropriate assessment will also require consideration of issues specific to the individual plan or project. The favourable condition table does not by itself provide a comprehensive basis on which to assess plans and projects as required under Regulations 20-21, 24, 48-50 and 54 - 85. The scope and content of an appropriate assessment will depend upon the location, size and significance of the proposed project. English Nature will advise on a case by case basis.

Following an appropriate assessment, competent authorities are required to ascertain the effect on the integrity of the site. The integrity of the site is defined in para C10 of PPG9 as the coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified. The determination of favourable condition is separate from the judgement of effect upon integrity. For example, there may be a time-lag between a plan or project being initiated and a consequent adverse effect upon integrity becoming manifest in the condition assessment. In such cases, a plan or project may have an adverse effect upon integrity even though the site remains in favourable condition.

Annual counts for qualifying bird species will be used by English Nature, in the context of five year peak means, together with available information on UK population and distribution trends, to assess whether the SPA is continuing to make an appropriate contribution to the Favourable Conservation Status of the species across Europe.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Calcareous fens with <i>Cladium mariscus</i> and species of the <i>Caricion davallianae</i> Floodplain/valley mire (E33)	NVC type S2 S24 S25	Extent	Area (ha), measured periodically.	Maintain type and extent of NVC communities which are optimal for the interest feature. No significant decrease from reference level.	Map extent and position of main NVC communities, monitor every 5 years. Reference level to be determined.
		Sward composition	Frequency of <i>Cladium mariscus</i>	Maintain extent and abundance of <i>Cladium mariscus</i> .	Monitor <i>Cladium</i> every 5 years. Reference level to be determined.
			Floristic quality of <i>Cladium mariscus</i> swamp (S2), <i>Phragmites australis-Peucedanum palustre</i> fen (S24) and <i>Phragmites australis-Eupatorium cannabinum</i> fen (S25) through the abundance of 'typical' species	Within the area occupied by target communities, the eponymous species and others of constancy V should be frequent.	Monitor every five years.
			Floristic quality of small sedge component of the vegetation	Maintain extent and abundance of small sedge component.	Monitor small sedge component every 5 years. Reference level to be determined
			Frequency or cover of tree / scrub spp.	No more than 5% cover, if in discrete stands, or no more than occasional throughout the sward	

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		Sward structure	Extent of bare mud or peat visible without disturbing vegetation	No more than 5% of mire area	
			Frequency of hoof prints	No more than occasional over the mire as a whole	
		Water quality	Base rich, low fertility supply to vegetation	Maintain groundwater and other base rich-low nutrient water sources to the vegetation	These communities can be adversely affected by nutrient enrichment. In floodplain situations river water quality is critically important.
				Establish target base and NPK concentration and monitor annually.	It is important that irrigating waters are free from excessive plant nutrients. Reference level to be determined
		Water quantity	Hydrological regime.	Maintain appropriate hydrological regime to support recognised vegetation types. Reference level to be determined	Better understanding of the functioning of sites is required, including the importance of groundwater and piezometric head Install dipwells in a network or transect and measure at least bimonthly.
		Water table	Level of water table for the S2 community	Within range -15 to +40cm, with standing water between tussocks	Install dipwells in a network or transect and measure at least bimonthly.
		Rare species.	Maintain or enhance populations of special or rare plant (and animal) species.	Species to be determined. Reference levels to be determined.	Identify special species and seek guidance in defining measures.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Molinia meadows on calcareous, peaty or clayey-silt-laden soils (<i>Molinia caerulea</i>)	NVC type M24 M25	Extent	Total area (ha), mapped in relation to a site-specific reference level to be determined, in period early June - end of August.	No reduction in area and any consequent fragmentation without prior consent	Recoverable reduction = unfavourable; non-recoverable reduction = partially destroyed. Temporary reductions related to natural variation in hydrological conditions should be noted as such where information allows.
Unimproved marshy grassland		Sward composition: positive indicator species	Record the frequency of positive indicator species from the list below to give an overall total of 2 frequent and 3 occasional. Record in period early June - end of August. <i>Anagallis tenella,</i> <i>Angelica sylvestris,</i> <i>Cirsium dissectum,</i> <i>Erica tetralix,</i> <i>Eupatorium cannabinum,</i> <i>Filipendula ulmaria,</i> <i>Galium uliginosum/</i> <i>Galium palustre,</i> Orchidaceae spp., <i>Potentilla erecta,</i> small blue-green <i>Carex</i> spp. (leaves less than 5mm wide) (<i>C. flacca, C.nigra, C.panicea</i>),	Overall total of at least two species/taxa frequent plus at least three species/taxa occasional throughout the sward.	Choice of species related to NVC types, restriction to unimproved grassland and wetness characteristics of habitat, all satisfactory when inside target. Among possible species that could be used, choice further restricted by ease of identification, visibility in recording period.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
			<i>Sphagnum</i> spp., <i>Succisa pratensis</i> , <i>Valeriana dioica</i> , <i>Valeriana officinalis</i> , <i>Viola palustris</i> .		
		Sward composition: frequency and cover of <i>Molinia caerulea</i>	Record the frequency and % cover of <i>Molinia caerulea</i> . Record in period early June - end of August.	At least frequent throughout the sward but no more than 80% cover	<i>Molinia</i> is a characteristic component of the community and should thus be at least frequent. However, increasing cover exceeding upper target is indicative of insufficient management by grazing or cutting.
		Sward composition: negative indicator species	Record the frequency and % cover of negative indicator species. Record in period early June- end of August. <i>Cirsium arvense</i> , <i>Cirsium vulgare</i> , <i>Rumex crispus</i> , <i>Rumex obtusifolius</i> , <i>Urtica dioica</i> .	No species more than occasional throughout the sward or singly or together more than 5% cover	Invasive species chosen to indicate problems of eutrophication and disturbance from various sources when outside target eg poaching, stock feeding.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		Sward composition: cover of <i>Juncus</i> spp	Record the % cover of <i>Juncus</i> species from groups A and B. Record in period early June - end of August. Group A: jointed rushes (<i>Juncus acutiflorus</i> , <i>J. articulatus</i> , <i>J. subnodulosus</i>) Group B: <i>Juncus conglomeratus</i> , <i>J. effusus</i> and <i>J. inflexus</i> .	All species combined no more than 80% cover, of which no more than 50% made up of spp. from Group B	<i>Juncus</i> spp can be characteristic components of the communities. However, increasing cover is indicative of insufficient management by grazing or cutting and/or waterlogging. Group B species may indicate problems of eutrophication from various sources when outside target eg stock feeding, fertiliser use.
		*Sward composition: negative indicator species.	Record the % cover of negative indicator species. Record in period early June - end of August. <i>Cirsium palustre</i> .	No more than 20% cover.	This species may be indicative of disturbance from various sources when outside target eg poaching, stock feeding.
		*Sward composition: negative indicator species.	Record the % cover of negative indicator species. Record in period early June - end of August. <i>Deschampsia cespitosa</i>	No more than 10% cover.	Increasing cover of <i>Deschampsia cespitosa</i> outside target may be indicative of insufficient management by grazing or cutting, overgrazing, disturbance by excessive poaching or altered hydrology eg reduced water movement in the soil profile during the year resulting in anaerobic conditions. Increasing cover may lead to reduced species richness in the community.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		*Sward composition: negative indicator species	Record the % cover or frequency of negative indicator species in period early June - end of August. All tree and scrub species excluding <i>Salix repens</i> and <i>Myrica gale</i> , considered together.	No more than 5% cover.	Invasive species outside target shows that habitat is not being managed sufficiently eg lack of or insufficient grazing/cutting If scrub/tree species in pastures are more than occasional throughout the sward but less than 5% cover, they are soon likely to become a problem if grazing levels are not sufficient or if scrub control is not being carried out.
		*Sward composition: % cover of <i>Phragmites australis</i>	Record the % cover of <i>Phragmites australis</i> in period early June - end of August.	No more than 10% cover.	Increasing cover of <i>Phragmites australis</i> outside target may be indicative of insufficient management by grazing or cutting. Lack of management may ultimately convert the community to tall-fen in some geographical areas.
		Sward composition: % cover of <i>Myrica gale</i> .	Record the % cover of <i>Myrica gale</i> in period early June - end of August.	No more than 10% cover	If <i>Myrica</i> cover outside target this shows that habitat is not being managed sufficiently eg lack of or insufficient grazing/cutting
		Sward composition: negative indicator species.	Record the frequency and % cover of negative indicator species. Record in period early June - end of August. <i>Senecio aquaticus</i>	No more than occasional throughout the sward or more than 5% cover	Outside target can discourage hay/grazing management because the species is toxic to livestock, and is palatable when dry.
		Sward structure: average height	Record sward height in period early June - end of August. (Upper target refers to pastures only.)	M24a Sward 5 cm or greater (excluding <i>Juncus</i> spp.) but no more than 25% over 60 cm	Sward height above upper target shows that habitat is not being managed sufficiently eg lack of or insufficient grazing or if below lower target, is being overgrazed.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
				M24b, M24c Sward 2 cm or greater (excluding <i>Juncus</i> spp.) but no more than 25% over 15 cm	
		Sward structure: litter	Record cover of litter where in a more or less continuous layer, distributed either in patches or in one larger area. Record in period early June - end of August for pastures.	Total extent no more than 25% of the sward	Outside target indicates biomass removal is insufficient eg lack of or insufficient grazing or not cut for hay.
		Sward structure: bare ground	Record extent of bare ground distributed through the sward, visible without disturbing the vegetation. Record in period early June - end of August.	No more than 10%	Outside target indicates problems with stock management eg poaching, supplementary feeding.
Transition mires and quaking bogs.	NVC type S27 M5 M9	Extent	Area (ha), measured periodically.	Maintain type and extent of NVC communities which are optimal for the interest feature. No significant decrease from reference level.	Map extent and position of main NVC communities, monitor every 5 years. Reference level to be determined.
Transitional as from open water		Sward structure	Frequency of hoof prints	No more than occasional over the mire as a whole	

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
to solid peat and/or from one trophic status to another. Floodplain/valley mire (E32)			Extent of bare mud or peat visible without disturbing vegetation	No more than 5% of mire area	
		Sward composition	Floristic quality of <i>Carex rostrata-Potentilla palustris</i> fen (S27), <i>Carex rostrata-Sphagnum squarrosum</i> mire (M5) and <i>Carex rostrata-Calliergon cuspidatum/giganteum</i> mire (M9) through the abundance of 'typical' species	Within the area occupied by target communities, the eponymous species and others of constancy V and IV should be abundant.	
			Frequency or cover of tree / scrub spp.	No more than 5% cover, if in discrete stands, or no more than occasional throughout the sward	It is acceptable to have component wet woodland communities and so the presence of scattered or weak scrub is not always a negative feature.
		Water quality	Maintenance of trophic status	Maintain the raft characteristics. Exclude surface and drainage water likely to increase fertility.	The balance between seepage and surface water must be maintained, and attention given to any differences of base-richness between competing sources of water.
		Water quantity	Stable groundwater	Water levels which does not fluctuate more than 30cm annually.	Install dipwells and measure at least bimonthly. Control of the range of vertical water level fluctuation may be important to maintain the delicate balance between base-rich and base-poor conditions.
		Physical condition of raft	Degree of movement capable by raft.	Presence of raft that trembles when walked upon.	Check for evidence of trophic change.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		Rare species	Maintain or enhance populations of special or rare plant (and animal) species	Species to be determined.	Identify special species and seek guidance in defining measures. Reference levels to be determined.
Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i>, <i>Alnion incanae</i>, <i>Salicion alvae</i>) Semi-natural woodland	Parts of NVC types W2 and W5 and 6)	Extent	Extent/location of stands	No loss of ancient semi-natural stands At least current area of recent semi-natural stands maintained, although their location may alter. At least the area of ancient woodland retained	* Stand loss due to natural processes eg in minimum intervention stands may be acceptable. * A high proportion of this type of woodland may be recent and hence a dynamic interchange with open wet communities may occur. * Stand destruction may occur if the understorey and ground flora are irretrievably damaged even if the canopy remains intact. * Loss = 0.5 ha or 0.5% of the stand area, whichever is the smaller. * 20% canopy cover is conventionally taken as the lower limit for an area to be considered as woodland. Stands of willow scrub may pose difficulties of definition. * Area and location of stands may be assessed remotely or by site visit.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		2. Natural processes and structural development	Age/size class variation within and between stands; presence of open space and old trees; dead wood lying on the ground; standing dead trees	<ul style="list-style-type: none"> * At least the current level of structural diversity maintained. * Understorey (2-5m) present over at least 20% of total stand area * Ground flora present over at least 50% of area excluding temporary pool areas * Canopy cover present over 30-90 % of stand area * Age class structure appropriate to the site, its history and management. * A minimum of 3 fallen lying trees or major branches per ha and 4 trees per ha allowed to die standing. 	<ul style="list-style-type: none"> * Any changes leading to exceedance of these limits due to natural processes are likely to be acceptable. * There is generally a good structural variety in these stands although veteran trees may be under-represented because of past treatment and the unstable nature of some sites. * The ground flora may appear sparse, particularly where periodic flooding leaves areas of bare mud etc. Its composition may be variable (see attribute 5). * In coppiced stands a lower canopy cover (of standards) can be accepted. * See JNCC guidance note for the sorts of age structure likely to be appropriate for different types of management regime. * Dead wood is often abundant but because there tend to be fewer big trees the size of the fallen wood is often small. Flooding may lead to local accumulations with other areas totally lacking fallen wood.
			Structures associated with the hydrological regime also need to be considered.	<ul style="list-style-type: none"> * At least the current level of natural hydrological features should be maintained (channels, pools, periodic flooding) 	<ul style="list-style-type: none"> * Assess this attribute by field survey. * Where possible the hydrological regime should be allowed to revert to a more natural state.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		3.Regeneration potential	Successful establishment of young stems in gaps or on the edge of a stand	<p>* Signs of seedlings growing through to saplings to young trees at sufficient density to maintain canopy density over a 10 yr period (or equivalent regrowth from coppice stumps).</p> <p>* No planting in stands .</p>	<p>* A proportion of gaps at any one time may develop into permanent open space; equally some current permanent open space/glades may in time regenerate to closed canopy.</p> <p>* Regeneration may often occur on the edges of stands rather than in gaps within it.</p> <p>* In coppice most of the regeneration will be as stump regrowth. See JNCC Guidance Note on likely desirable levels of regeneration.</p> <p>* The minimum level of regeneration to be acceptable from a nature conservation viewpoint is likely to be much less than that needed where wood production is also an objective.</p> <p>* Assess this attribute by walking through the wood in spring/summer.</p>
		4. Composition	<p>Cover of native versus non-native species (all layers)</p> <p>Death, destruction or replacement of native woodland species through effects of non-native fauna or external unnatural factors</p>	<p>* At least the current level of site-native species maintained.</p> <p>* At least 90% of cover in any one layer of site-native or acceptable naturalised species.</p> <p>* Death, destruction or replacement of native woodland species through effects of introduced fauna or other external unnatural factors not more than 10% by number or area in a five year period.</p>	<p>* In sites where there might be uncertainty as to what counts as site-native or as an acceptable naturalised species this must be made clear (eg the position of poplar).</p> <p>* Where cover in any one layer is less than 100% then the 90% target applies to the area actually covered by that layer.</p> <p>* Factors leading to the death or replacement of woodland species could include pollution, including eutrophication from adjacent farmland; new diseases (eg alder dieback).</p> <p>* Damage to species by non-native species that does not lead to their death or replacement by non woodland species (eg damage from squirrels to trees that non-the-less survive) is not necessarily unacceptable in nature conservation terms.</p> <p>* Excessive browsing/grazing by even native ungulates may be considered an unnatural external factor where it</p>

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
					leads to undesirable shifts in the composition/structure of the stand, although this may be picked up by attributes 2 or 5 anyway. * Assess this attribute by a walk through the site.
		5. Species, habitats, structures characteristic of the site.	Ground flora type Distinctive and desirable elements for a given site eg. locally uncommon species such as <i>Carex elata</i> ; veteran trees or rich invertebrate assemblages. Patches of associated habitats and transitions eg to ash wood, open fen and open water	* 80% of ground flora cover referable to relevant NVC wet woodland community (W 2, 5, 6 and 7) * Distinctive elements maintained at current levels and in current locations (where appropriate). * Patches and transitions maintained in extent and where appropriate location.	* Changes leading to these targets not being met may be acceptable where this is due to natural processes. * Distinctive elements and patches should be marked on maps for ease of checking in the field wherever possible. * If there are species groups/assemblages that cannot be assessed directly on a general site visit then surrogate features should be given where possible, eg dead wood concentrations for associated invertebrates.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
<p>22.12/44 Hard oligo-mesotrophic waters with benthic vegetation of <i>Chara</i> formations</p> <p>Turf ponds and ditch systems.</p>	<p>Almost exclusively type '4' of the GB Standing Water Classification. Very rarely types '5' and '10'.</p>	<p>Extent of <i>Chara</i> beds.</p>	<p>Check extent of <i>Chara</i> beds in July on an annual basis.</p>	<p>Maintain type and extent of <i>Chara</i> vegetation which is optimal for the interest feature. No significant decrease from reference level.</p> <p>Reference level to be determined.</p>	<p><i>Chara</i> community. <i>Chara</i> formations of various species. Endangered/Vulnerable/Rare species are <i>Chara intermedia</i>, <i>Chara baltica</i>, <i>Chara canescens</i>, <i>Chara rudis</i> and <i>Chara connivens</i>; and nationally scarce species are <i>Chara aspersa</i>, <i>Chara contraria</i>, <i>Chara pedunculata</i> and <i>Chara curta</i>. All are potentially components of a supporting community of <i>Myriophyllum spicatum</i>, <i>Potamogeton</i> species, <i>Callitriche</i> species and <i>Nymphaea alba/Nuphar lutea</i>. Turf ponds often fringed by <i>Phragmites australis</i>, <i>Typha angustifolia</i> and <i>Schoenoplectus lacustris</i>. Baseline survey should be carried out to determine present extent of <i>Chara</i> beds. Check for deterioration, extent of epiphytic growth on <i>Chara</i>. "Holes" in <i>Chara</i> beds should be monitored. <i>Elodea canadensis</i> should be absent. As <i>Chara</i> species are a colonising aspect of seral progression supporting macrophyte community may have to be managed to prevent seral progression.</p> <p>Extent will be variable according to site and can be variable according to seasonal changes In many cases <i>Chara</i> will be dominant feature.</p>

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		Extent of supporting community including emergent vegetation.	Check community of associated macrophytes including, rare species, on an annual basis. Rare species include <i>Najas marina</i> . Maintain Chara and other species diversity.	Stable not expanding or contracting supporting community over 5 year period within limits of $\pm 10\%$ annually.	
		Water quality	Absence of filamentous algae and unicellular algal blooms. Establish Total P range by quarterly measurements over 3 year period, thereafter annually July/August.	For <i>Chara</i> lake $30 \mu\text{g l}^{-1}$ total phosphorus or below. Eutrophic conditions above $30 \mu\text{g l}^{-1}$ total phosphorus should not be prevalent.	Filamentous algae should be absent. The range of marl lakes exhibit a continuum of trophic condition from oligotrophy to low eutrophy. So the trophic condition for each marl lake type should be maintained. If filamentous algae present. Check for diffuse or point sources of pollution. Check Total P levels in aquifer if aquifer fed, check also that site not used for black-headed gull roosting or breeding. The target level should be set for individual SAC's and an acceptable range established. Increases in Total P level suggest need to move from annual July/August check back to more intensive quarterly samples to verify whether change is real.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		Sediment	Check condition of sediment and measure overall cover of marl every 10 years.	Marl production desirable, although this may be low or absent in oligotrophic hard waters. Some peat slumping acceptable, provided this is not induced due to land drainage.	Check immediate catchment area for drainage or land use change which might induce high sediment loads to enter system.
		Hydrology	Check water level in July annually.	Maintenance of stable water level desirable, although seasonal fluctuations expected.	Water level change downwards acceptable only in dry years. If lake level lowering due to outside water demands such as aquifer abstraction then counter measures need to be instigated.
22.13 Natural eutrophic lakes with Magnopotamion or Hydrocharition type vegetation. Standing water	NVC types: A3 A9 A13 A4 Types '7', '8', '9' and '10' of the GB Standing Water Classification.	Extent of community.	Check extent of beds in July/August every 4 years.	Extensive beds of submerged macrophytes should be present. Maintain mixed community.	Submerged vegetation characterised by broad leaved <i>Potamogeton</i> species such as <i>Potamogeton perfoliatus</i> , <i>P lucens</i> , <i>P crispus</i> , <i>P natans</i> , <i>P x salicifolius</i> , <i>P coloratus</i> , <i>P polygonifolius</i> , <i>P gramineus</i> , <i>P. alpinus</i> and <i>Hydrocharition</i> type vegetation. <i>Hydrocharis morsus-ranae</i> is a very rare associate with the <i>Magnopotamion</i> in the UK. Its community components are present, however, mainly <i>Spirodela polyrhiza</i> , <i>Lemna minor</i> , <i>Hippuris vulgaris</i> , <i>Utricularia vulgaris</i> and <i>Apium inundatum</i> . Community should be mixed and no one species should be present above 40% level of total amount of macrophyte presence.
Broads,turf ponds and ditch systems		Extent of <i>Potamogeton</i> species <i>Magnopotamion</i> .	Check species presence in July/August every 4 years.	Maintain species presence of all <i>Magnopotamion</i> and fine leaved <i>Potamogetons</i> .	No one <i>Potamogeton</i> species should be present above 40% level of total amount or level of macrophyte presence (see Water Quality comment).

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		Extent of nationally scarce or threatened species.	Establish population size and position of nationally scarce, rare or threatened species over a period of 3 years, on a quarterly basis; thereafter every two years in July/August.	Maintain presence of all nationally scarce, rare or threatened plant species.	Nationally scarce, rare or threatened species can vary in population size and extent due to temporal/seasonal changes in climate which affects physical variables such as water temperature.
		Water quality	Arrange for analysis of quarterly measurements of Total P for first three years; thereafter annually in July/August.	Maintain water quality particularly Total P levels. For southern systems 100 $\mu\text{g l}^{-1}$ or below down to 65 $\mu\text{g l}^{-1}$.	The variable targets for Total P reflects the geographical range of this trophic state. The target for Total P should be set for individual SAC's and an acceptable range established. Increases in Total P suggest a need to move from annual July/August check, back to more intensive quarterly samples to verify whether change is real. Also check for cover shifts of macrophytes and dominant presence of pollution tolerant species above 40% level such as <i>Potamogeton pectinatus</i> , <i>Myriophyllum spicatum</i> and/or <i>Ceratophyllum demersum</i> .
		Water quantity	Check lake levels during July/August.	Maintain hydrology of lake or ditch system.	Hydrology involves not only lake or ditch levels but flushing rates; prevent lowering or raising of lake or ditch level through modification of outfalls. With ditch systems aim for constant high water table throughout the year Water abstraction may represent a significant issue through the reduction of ground water and flushing flows into marginal ditch systems.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		Sediment	Check for excessive growths of individual macrophytes ie above 40%.	Maintain sediment quality and quantity.	Effects of increased macrophyte growth also relates to water quality; if this is at target levels, then enrichment of sediments is an issue if broad leaved <i>Potamogeton</i> species decline and fine leaved <i>Potamogeton pectinatus</i> increases above 40% level or <i>Myriophyllum spicatum</i> / <i>Ceratophyllum demersum</i> become dominant. Introduced fish and recreational use of site might through sediment disturbance move sites out of favourable condition. Check for increases in siltation from catchment use changes or changes in sewage treatment.
Fen	Fen orchid <i>Liparis loeselii</i>	Vegetation	Visual assessment	Requires deep moss carpet with relatively high water levels at or near surface through year.	Negative attribute: Lack of deep moss carpet; deep litter layer.
			Visual assessment	Requires lack of scrub - <10% and scattered	Negative attribute: presence of scrub shading plants
			Visual assessment	Associates: Bryophytes including <i>Campylium protensum</i> , <i>Calliergon giganteum</i> , <i>Scorpidium scopioides</i> , <i>Cinclidium stygium</i> , <i>Carex appropinquata</i> , <i>C. lassiocarpa</i> , <i>Schoenus nigricans</i> associated with S24e and f	
			Visual assessment	Natural succession: Terrestrialisation of fens through hydrosere succession.	
		Sward height	Visual assessment	Varies and link to plant populations is unknown	
		Water	Visual assessment	Needs surface wetness in summer	Negative attribute: Conductivity over 500uS Abstraction impacts on water levels
		Management	Regime	Mowing on 2-4 year rotation and/or extensive grazing (1 cow/4 ha) during summer depending on fen's productivity.	Trampling at a low level helps to open up the sward

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
River, lake and ditch system.	Otter <i>Lutra lutra</i>	Water quality	EA scale	"Good", with no pollution incidents	Refer to Environment Agency for data
		Flow rate	Mean annual flow rate	No reduction attributable to increased abstraction.	Data from Environment Agency
		Site integrity	Total area	No reduction of fragmentation of area	
		Fish stocks	EA assessment	Fish stocks appropriate to the nutrient status of the river No significant decline in fish biomass or species diversity	Refer to Environment Agency for sample data
		Disturbance	Extent of public access to river	No significant change to river or bankside usage; no significant development	
		Bankside cover	Proportion of bank lined with trees, scrub or other thick cover	No overall permanent decrease	Some change acceptable as long as it is appropriately mitigated
		Presence of otters	Signs of otters	Signs of otters found at least once per year	Use data from national or county surveys

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Rivers fens	Desmoulin's whorl snail <i>Vertigo moulinsiana</i>	structure and composition of marginal vegetation	Length or area of stand of appropriate vegetation	The extent of suitable habitat should be maintained, compared to the extent on a baseline map, over appropriate lengths of river or area of fen or pool margin [length of river or area of fen or swamp, and number of sample stretches to be decided locally]. Suitable vegetation will be dense, unbroken stands of <i>Glyceria maxima</i> , <i>Carex riparia</i> , <i>C. acutiformis</i> , <i>C. paniscus</i> <i>Cladium mariscus</i> and/or sparse <i>Phragmites</i> and <i>Phalaris arundinacea</i> .	It is expected that traditional and accepted river management will cause local deterioration of some stands but the aim is to ensure that habitat in appropriate condition is present at frequent intervals along a river corridor. The snail appears to be able to colonise new adjacent stands rapidly, and closely spaced, fragmented patches may provide acceptable conditions for this species. Habitat should be a suitable size and linked to rivers and waterways hydrologically and not separated by barriers such as mown paths.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Rivers fens		water table	1. depth below ground level; 2 & 3. vegetation indicators of drying out.	1. Water table must be close to the surface so that the ground remains squelchy all year, i.e. never drying out, so that, even in high summer, water will rise when the soil is trodden. Winter flooding is permissible. 2. Not more than 10% (occasional on the DAFOR scale) replacement of preferred dominant species by dense tall reed or by plants of drier conditions, e.g. <i>Urtica dioica</i> , <i>Epilobium hirsutum</i> , and low grasses invading the litter layer, within pre-selected stands (as selected for	<i>V. mouliinsiana</i> requires highly humid conditions which are met by a high water table below the stands of vegetation in which it lives. Unfavourably wet conditions can result from prolonged flooding in summer or water penning being set too high. Current research (2000-01) will refine acceptable limits and measures for soil moisture. measuring extent). 3. Not more than 10% (occasional on the DAFOR scale) replacement of tall monocotyledons by plants preferring wetter conditions, e.g. <i>Rorippa nasturtium-aquaticum</i> , <i>Apium nodiflorum</i> and <i>Berula erecta</i> .
Rivers fens		vegetation height	height of bulk of the vegetation	Average height of the stands no less than 50 cm.	<i>V. mouliinsiana</i> requires tall leaves on which it lives most of the year. Heavy grazing and mowing may be detrimental if it removes most taller clumps.
Rivers fens		shading by shrubs and trees (e.g. willow, alder)	proportion of habitat	Less than 10% increase in area of shade, compared to extent on the baseline map.	

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
rivers fens		water quality	Biological class - Environment Agenc's General Quality Assessment scheme. Assess every 5 years River Ecosystem Class. Assess against Environment Agency monitoring results. Suspended solids	>='b' In addition, no drop in class from exiting situation. >= RE3 In addition, no drop in class from exiting situation.	Although the snail lives out of the water, water quality may influence vegetation structure and perhaps the microflora living on the leaf surfaces where the snail feeds, and chemical quality may directly affect the snail when it is submerged during floods. Future experience and research may indicate that these variables are inapplicable to <i>V. moulinsiana</i> . No values are given for suspended solids as this pollutant has no direct influence on the condition of the habitat for moulinsiana. No monitoring targets are set for hardness but assessments for projects must take account of the snail's need for water whose hardness must not fall below value expected for the catchment.
All habitats: Swamp, Marginal and Inundation, Standing Water	Annex 1 species of European importance and waterfowl assemblage including migratory species of European and national importance.	Extent of habitat.	Area (ha), measured periodically (frequency to be determined).	No significant decrease from reference level.	For all habitats for all qualifying species. Methodology for assessing target to be determined. Reference level to be determined.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		Disturbance in roosting and feeding areas	Reduction or displacement of birds, measured periodically (frequency to be determined).	No significant displacement of birds attributable to human disturbance in relation to reference level.	All qualifying breeding and wintering annex 1 and migratory species. Methodology for assessing target to be determined. Reference level to be determined.
All habitats: Swamp, Marginal and Inundation, Standing Water	Annex 1 species of European importance.	Food Availability	Abundance of live mammals and birds, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of food species year round in relation to reference level.	Small-medium sized mammals (voles, mice, rabbits) and birds (pipits to ducks) are important prey in the breeding season for marsh harriers and during the winter for hen harriers. Methodology for assessing target to be determined. Reference level to be determined.
Swamp, Marginal and Inundation	Annex 1 species of European importance.	Landscape	Large, unbroken expanse of emergent vegetation (nesting, feeding, concealment), measured periodically (frequency to be determined).	No significant reduction in expanse of emergent vegetation year round.	Bittern and Marsh Harrier require continuous reed over >20ha. Methodology for assessing target to be determined.
Swamp, Marginal and Inundation	Annex 1 species of European importance.	Vegetation characteristics	Pure reed stand with vigorous growth over whole area (nesting, concealment), measured periodically (frequency to be determined).	No significant reduction in extent of vigorous growth over the pure reed stand, maintained through cutting regime.	Bittern and marsh harrier require at least 30% of the reedbed uncut and the remainder not more than 6 years old with no more than 20% cut in any year. Methodology for assessing target to be determined.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Swamp, Marginal and inundation	Annex 1 species of European importance.	Water depth	Shallow water within reeds plus frequent deep pools and channels (feeding), measured periodically (frequency to be determined).	Water depth and extent of shallows within reeds should not deviate significantly with no significant reduction in the presence of deep pools and channels year round.	<p>Bittern and marsh harrier require water throughout the reedbed of 10-30cm, and bittern also require pools 2-4m deep.</p> <p>Channels for bittern should be up to 2.5m deep, consisting of a deep central channel (>1.5m) and 1m deep/5m wide shallow margin on at least one side.</p> <p>Methodology for assessing target to be determined.</p>
Swamp, Marginal and Inundation	Annex 1 species of European importance.	Hydrology flow	Stable Water levels, measured periodically (frequency to be determined).	Water levels should not deviate significantly during the breeding season.	<p><10cm fluctuation is required during the breeding season for Marsh Harrier.</p> <p>Methodology for assessing target to be determined.</p>
Swamp, Marginal and Inundation Standing Water	Annex 1 species of European importance.	Food Availability	Presence and abundance of fish and amphibians, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of prey species year round, in relation to reference level.	<p>Eel, rudd, roach of 6-35cm and frogs/toads are important for Bittern.</p> <p>Methodology for assessing target to be determined. Reference level to be determined.</p>
Standing Water	Migratory species of European and national importance.	Food Availability	Presence and abundance of aquatic plants, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of food species during the winter season in relation to reference level.	<p><i>Glyceria fluitans</i>, <i>Agrostis stolonifera</i>, <i>Chara</i>, <i>Potamogeton</i> and <i>Ceratophyllum spp</i> for gadwall.</p> <p><i>Scirpus</i>, <i>Eleocharis</i>, <i>Carex</i>, <i>Potamogeton</i> and <i>Glyceria</i> for shoveler.</p> <p><i>Chara</i>, <i>Nitella</i> and <i>Potamogeton spp.</i> are important for pochard and tufted duck.</p> <p><i>Chara</i>, <i>Cladophora</i>, <i>Potamogeton</i>, <i>Ruppia</i>, <i>Ranunculus</i> and <i>Elodea</i> are important for Coot.</p> <p>Methodology for assessing target to be determined. Reference level to be determined.</p>

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Standing Water	Nationally important migratory species.	Food Availability	Presence and abundance of seed bearing plants, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of food species during the winter season in relation to reference level.	<i>Polygonum, Eleocharis, Rumex</i> and <i>Ranunculus</i> are important for Teal. Methodology for assessing target to be determined. Reference level to be determined.
Standing Water	Migratory species of European and national importance.	Food availability	Presence and abundance of aquatic invertebrates, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of prey species during the winter season in relation to reference level.	Hydrobia, crustaceans, caddisflies, diptera and beetles are important for shoveler. Hydrobia, flies, caddisfly, beetles and bugs are important for teal. Methodology for assessing target to be determined. Reference level to be determined.
Standing Water	Nationally important migratory species.	Food availability	Presence and abundance benthic invertebrates, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of prey species during the winter season in relation to reference level.	Chironomid larvae are important for pochard. <i>Dreissena polymorpha</i> , chironomid larvae, <i>Gammarus</i> and <i>Hydrobia</i> are important for tufted duck. Methodology for assessing target to be determined. Reference level to be determined.
Standing Water	Nationally important migratory species.	Food availability	Presence and abundance of surface and benthic invertebrates, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of prey species during the winter season in relation to reference level.	<i>Mytilus</i> , <i>Dreissena polymorpha</i> and caddis-fly larvae are important for coot. Methodology for assessing target to be determined. Reference level to be determined.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Standing Water	Nationally important migratory species.	Food availability	Presence and abundance of fish, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of prey species during the winter season in relation to reference level.	<p>Fish of 10-25 cm are important for cormorant.</p> <p>Fish of 3-21 cm are important for great crested grebe.</p> <p>Methodology for assessing target to be determined. Reference level to be determined.</p>
Standing Water	Migratory species of European and national importance.	Water depth	Areas of shallow medium and deep water (feeding), measured periodically (frequency to be determined).	Water depths should not deviate significantly during the winter season.	<p>Cormorant require a water depth of 2-10m.</p> <p>Great crested grebe require a water depth of 1-3m.</p> <p>Gadwall require a water depth of <25cm. A kleptoparasitic relationship with Coot can allow Gadwall to potentially exploit deeper areas up to 2m in depth.</p> <p>Shoveler and teal require a water depth of <30cm.</p> <p>Coot require a water depth of 0.5-2m.</p> <p>Pochard and tufted duck require a water depth of 2-5m.</p> <p>Methodology for assessing target to be determined.</p>
Standing Water	Annex 1 species of European importance.	Water area	Large open areas of water(feeding), measured periodically (frequency to be determined).	No significant reduction in the area of open water for feeding year round.	<p>Bittern require one or more freshwater pools of >0.5ha not exceeding 20% of reedbed area overall.</p> <p>Methodology for assessing target to be determined.</p>

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Standing Water	Migratory species of national importance.	Water area	Large open areas of water (feeding, roosting), measured periodically (frequency to be determined).	No significant reduction in the area of open water for feeding and roosting during the winter season.	<p>Cormorant require one or more fresh waters of >20ha.</p> <p>Pochard require one or more fresh waters of >6ha.</p> <p>Tufted duck require one or more freshwaters of >5ha.</p> <p>Coot require one or more freshwaters of >2ha.</p> <p>Great crested grebe require one or more freshwaters of >1ha.</p> <p>Methodology for assessing target to be determined.</p>



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cSAC: Norfolk Valley Fens
Component SSSI: Booton Common

Conservation objective for the European Interest on the SSSI

The conservation objectives for the European interests on the SSSI are:

to maintain*in favourable condition, the:

- Alkaline fens
- Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae*
- *Molinia* meadows on chalk, peat, clay or silt-laden soils (*Molinion caeruleae*)

* maintenance implies restoration if the feature is not currently in favourable condition.

The Conservation Objectives for Norfolk Valley Fens candidate Special Area of Conservation are, in accordance with para C10 of PPG 9, the reasons for which the cSAC was designated. The cSAC also includes land within Badley Moor, Dereham SSSI, Buxton Heath SSSI, Coston Fen, Runhall SSSI, East Walton and Adcock's Common SSSI, Flordon Common SSSI, Foulden Common SSSI, Great Cressingham Fen SSSI, Holt Lowes SSSI, Potter and Scarning Fens SSSI, Sheringham and Beeston Regis Common SSSI, Southrepps Common SSSI, Swangey Fen, Attleborough SSSI and Thompson Water, Carr and Common SSSI.

Favourable Condition Table for Booton Common SSSI

The favourable condition table will be used by English Nature to determine favourable condition and other relevant authorities to determine if a site is in favourable condition. Favourable condition is achieved when when the targets set out below are met.

The favourable condition table should inform the scope and nature of any ‘appropriate assessment’ under the Habitats Regulations, but an appropriate assessment will also require consideration of issues specific to the individual plan or project. The favourable condition table does not by itself provide a comprehensive basis on which to assess plans or projects as required under Regulations 20-21, 24, 48-50 and 54-85. The scope and content of an appropriate assessment will depend upon the location, size and significance of the proposed project. English Nature will advise on a case by case basis.

Following an appropriate assessment, competent authorities are required to ascertain the effect on the integrity of the site. The integrity of the site is defined in para. C10 of PPG9 as ‘the coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified. The determination of favourable condition is separate from the judgement of effect upon integrity. For example, there may be a time lag between a plan or project being initiated and a consequent adverse effect upon integrity being manifest in the condition assessment. In such cases, a plan or project may have an adverse effect upon integrity even though the site remains in favourable condition.

Operational feature	Criteria feature	Attributes	Measures	Targets	Comments
Spring and seepage-fed chalk-rich alkaline valley fen	M13 black bog rush - blunt flowered rush <i>Schoenus nigricans</i> - <i>Juncus subnodulosus</i> fen.	Extent	Extent identified in NVC survey (Norfolk Wildlife Trust 2000)	Maintain as an absolute minimum baseline the extent and area identified by the Norfolk Wildlife Trust NVC survey 2000	Extent of fen communities may be subject to some natural dynamic variation, in response to extensive grazing pressure.
	M9 bottle sedge - <i>Carex rostrata</i> - <i>Calliergon cuspidatum</i> mire		Extent identified for restoration to chalk-rich fen from other semi-natural habitats, in the Booton Common Management Plan 2000-2004	Extend the chalk-rich fen communities into areas currently occupied by secondary scrub, which have been identified for restoration to fen in the Booton Common Management Plan 2000-2004	
		Water quantity and quality	High piezometric head and permanently high water table (allowing for natural seasonal fluctuations) The spring water has low fertility and is rich in base ions.	Summer water levels (July-September) to fall no more than 10 cm below the surface.	
		Vegetation structure	Presence of varied sward structure with full range of vegetation heights, from close cropped to tall and ungrazed. Includes varying degrees of tussock height. Always includes elements of short pioneer fen vegetation	At height of summer (July August), fen vegetation to be typically no more than 0.5 metres tall, with random mosaic of differing vegetation and tussock heights across whole fen area.	As with extent, likely to be influenced by grazing regime, with vegetation responding to variable grazing pressure over time.
Operational feature	Criteria feature	Attributes	Measures	Targets	Comments
		Vegetation composition	Brown moss <i>Sphagnum spp.</i> carpets List A: <i>Schoenus nigricans</i> <i>Juncus subnodulosus</i>	Brown moss carpets to occupy between 15 and 30% of overall fen area. <i>Schoenus nigricans</i> and <i>Juncus subnodulosus</i> to be at least frequent	

			<i>Carex rostrata</i> List B: <i>Pinguicula vulgaris</i> <i>Parnassia palustris</i> <i>Anagallis tenella</i> <i>Briza media</i> <i>Carex diandra</i> Orchid species	within areas of M13. <i>Carex rostrata</i> to be at least occasional within M9. All species in list B to be at least occasional in M13 except <i>Carex diandra</i> , to be at least occasional in M9 only.	
		Negative indicators	<i>Phragmites australis</i> <i>Urtica dioica</i> <i>Salix cinerea</i> <i>Epilobium hirsutum</i> <i>Eupatorium cannabinum</i> <i>Fillipendula ulmaria</i>	Clumps of <i>Salix cinerea</i> to occupy no more than 5% of the overall fen area. All other species listed to be no more than rare in the overall fen area.	
Stands of reed and tall herb fen rich in Cladium mariscus	S25 common reed - hemp agrimony with great fen sedge <i>Cladium mariscus</i> - <i>Eupatorium cannabinum</i> (<i>Cladium mariscus</i> sub community) swamp	Extent	Extent identified in NVC survey (Norfolk Wildlife Trust 2000)	Maintain as an absolute minimum baseline the extent and area identified by the Norfolk Wildlife Trust NVC survey 2000	Extent of swamp communities may be subject to some natural dynamic variation, in response to extensive grazing pressure.
		Water quality and quantity	Base-rich, low fertility supply of groundwater. High piezometric head and permanently high water table (allowing for natural seasonal fluctuations)	? Allowing for natural seasonal variation, water table to drop no more than 20cm below ground level in summer.	
Operational feature	Criteria feature	Attributes	Measures	Targets	Comments
		Vegetation structure	% cover of tall vegetation dominated by common reed, hemp agrimony and great fen sedge.	Tall <i>Phragmites</i> dominated swamp, not less than 0.5 metres high, to occupy no less than 80% of the overall swamp area.	As with extent, likely to be influenced by grazing regime, with vegetation responding to variable grazing pressure over time.
		Vegetation composition	List A: <i>Cladium mariscus</i> <i>Phragmites australis</i> List B: <i>Caltha palustris</i> <i>Manyanthes trifoliata</i>	<i>Phragmites australis</i> to be at least frequent. <i>Cladium mariscus</i> to be at least occasional Any two from list B to be at least occasional.	

			<i>Potentilla palustris</i> <i>Mentha aquatica</i>		
		Negative indicators	encroaching <i>Salix cinerea</i> <i>Urtica dioica</i> <i>Rubus spp.</i>	Salix scrub to occupy no more than 10% of the overall swamp area	Encroaching negative species may indicate either drying out or insufficient management.
Purple moor grass mire	M24 purple moor grass - meadow thistle <i>Molinia caerulea</i> - <i>Cirsium dissectum</i> fen meadow	Extent	Extent identified by NVC survey (Norfolk Wildlife Trust 2000) Extent identified for restoration to fen meadow from other semi-natural habitats in Booton Common Management Plan 2000-2004.	Maintain as absolute minimum baseline extent identified by Norfolk Wildlife Trust NVC survey 2000. Extend into areas currently occupied by scrub and secondary woodland, but identified for restoration to fen meadow, in Booton Common Management Plan 2000-2004.	Extent of fen communities may be subject to some natural dynamic variation, in response to extensive grazing pressure
Operational feature	Criteria feature	Attributes	Measures	Targets	Comments
		Sward composition: positive indicator species	The frequency of positive indicator species from the list below to give an overall total of 2 frequent and 3 occasional. <i>Anagallis tenella, Angelica sylvestris, Cirsium dissectum, Erica tetralix, Eupatorium cannabinum, Filipendula ulmaria, Galium uliginosum/ Galium palustre, Lotus pedunculatus, Orchidaceae spp., Pedicularis sylvatica, Potentilla erecta, sedges (C. flacca, C.nigra,C.panicea), Sphagnum spp., Succisa pratensis, Valeriana dioica, Viola palustris.</i>	Overall total of at least two species/taxa are frequent plus at least three species/taxa are occasional throughout the sward. <i>Eupatorium cannabinum, Angelica sylvestris</i> and <i>Filipendula ulmaria</i> should be no more than occasional.	Choice of species related to NVC types, restriction to unimproved grassland and wetness characteristics of habitat, all satisfactory when inside target. Among possible species that could be used, choice further restricted by ease of identification, visibility in recording period.
		Sward composition: frequency and cover of <i>Molinia caerulea</i>	Record the frequency and % cover of <i>Molinia caerulea</i> . Record in period early June - end	At least frequent throughout the sward but no more than 80% cover	<i>Molinia</i> is characteristic of the community and

			of August.		should be at least frequent. However, increasing cover exceeding upper target is indicative of insufficient management by grazing or cutting.
Operational feature	Criteria feature	Attributes	Measures	Targets	Comments
		*Sward composition: cover of <i>Juncus</i> spp	Record the % cover of <i>Juncus</i> species from groups A and B. Record in period early June - end of August. Group A: jointed rushes (<i>Juncus acutiflorus</i> , <i>J. articulatus</i> , <i>J. subnodulosus</i>) Group B: <i>Juncus conglomeratus</i> , <i>J. effusus</i> and <i>J. inflexus</i> .	All species combined no more than 80% cover, of which no more than 50% made up of spp. from Group B	<i>Juncus</i> spp can be characteristic components of the communities. However, increasing cover is indicative of insufficient management by grazing or cutting and/or waterlogging. Group B species may indicate problems of eutrophication when outside target .
		*Sward composition: negative indicator species.	Record the % cover of negative indicator species. Record in period early June - end of August. <i>Cirsium palustre</i> . <i>Deschampsia cespitosa</i> <i>Phragmites australis</i> <i>Salix cinerea</i> <i>Cirsium vulgare</i>		Invasive species outside targets shows that habitat is not being managed sufficiently eg lack of or insufficient grazing/cutting
		Sward structure:	Sward height in period early June	M24a	Sward height above

		average height	- end of August. (Upper target refers to pastures only.)	Sward 5 cm or greater (excluding <i>Juncus</i> spp.) but no more than 25% over 60 cm M24b, M24c Sward 2 cm or greater (excluding <i>Juncus</i> spp.) but no more than 25% over 15 cm	upper target shows that habitat is not being managed sufficiently eg lack of or insufficient grazing or if below lower target, is being overgrazed.
Operational feature	Criteria feature	Attributes	Measures	Targets	Comments
		Sward structure: litter	Cover of litter where in a more or less continuous layer, distributed either in patches or in one larger area. Record in period early June - end of August for pastures.	Total extent no more than 20% of the sward	Outside target indicates biomass removal is insufficient eg lack of or insufficient grazing or not cut for hay.
		Sward structure: bare ground	Extent of bare ground distributed through the sward, visible without disturbing the vegetation. Record in period early June - end of August.	No more than 5%	Outside target indicates problems with stock management eg poaching, supplementary feeding.



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cSAC: Waveney and Little Ouse Valley Fens Component SSSI: Blo’Norton and Thelnetham Fens

Conservation Objectives for the European Interest features on the SSSI

The Conservation Objectives for the European interest on the SSSI are:

to maintain*, in favourable condition, the:

- Calcareous fens with *Cladium mariscus* and the species of the *Caricion davallianae*
- *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*)

* maintenance implies restoration if the feature is not currently in favourable condition.

The Conservation Objectives for the Waveney and Little Ouse Valley Fens candidate Special Area of Conservation are, in accordance with para C10 of PPG 9, the reasons for which the cSAC was designated.

The cSAC also includes land within Weston Fen SSSI and Redgrave and Lopham Fens SSSI.

Favourable Condition Table for Blo’Norton and Thelnetham Fens SSSI

The Favourable Condition Table will be used by English Nature and other relevant authorities to determine if a site is in favourable condition. Favourable condition is achieved when the targets given below are met.

The favourable condition table should inform the scope and nature of any ‘appropriate assessment’ under the Habitats Regulations, but an appropriate assessment will also require consideration of issues specific to the individual plan or project. The favourable condition table does not by itself provide a comprehensive basis on which to assess plans and projects as required under Regulations 20-21, 24, 48-50 and 54 - 85. The scope and content of an appropriate assessment will depend upon the location, size and significance of the proposed project. English Nature will advise on a case by case basis.

Following an appropriate assessment, competent authorities are required to ascertain the effect on the integrity of the site. The integrity of the site is defined in para C10 of PPG9 as the coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified. The determination of favourable condition is separate from the judgement of effect upon integrity. For example, there may be a time-lag between a plan or project being initiated and a consequent adverse effect upon integrity becoming manifest in the condition assessment. In such cases, a plan or project may have an adverse effect upon integrity even though the site remains in favourable condition.

Calcareous fens with *Cladium mariscus* and the species of the *Caricion davallianae*

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Basin / floodplain mire (E32 / E33)	NVC types S24, S25, S26	Extent	Area (ha)	No loss without prior consent	
		Sward composition	Combined cover of grasses, sedges, rushes and tall herbaceous dicotyledons	At least 75%	
			Frequency of positive indicators (DAFOR scale): <i>Angelica sylvestris</i> , <i>Cirsium arvense</i> , <i>Calliergon cuspidatum</i> (not mentioned in 1965 survey), <i>Caltha palustris</i> , <i>Eupatorium cannabinum</i> , <i>Filipendula ulmaria</i> , <i>Iris pseudacorus</i> (not mentioned in 1965 survey), <i>Juncus subnodulosus</i> , <i>Lythrum salicaria</i> , <i>Mentha aquatica</i> , <i>Menyanthes trifoliata</i> , <i>Peucedanum palustre</i> (not mentioned in 1965 survey), <i>Phalaris arundinacea</i> (not mentioned in 1965 survey), <i>Valeriana officinalis</i> , <i>Vicia cracca</i>	For S24: At least two species frequent and two species occasional throughout the sward For S25 & S26: At least one species frequent and two species occasional	
			Frequency or cover of <i>Urtica dioica</i>	For S24 & S25: No more than occasional For S26: Is not dominant (forming pure stands) over more than 10% of the mire	
			Frequency of <i>Galium aparine</i> (not mentioned in 1965 survey) (DAFOR scale)	No more than locally frequent	
			Frequency or cover of tree / scrub spp.	No more than 5% cover, if in discrete stands, or no more than occasional throughout the sward	
		Sward structure †	Litter in a more or less continuous layer	No more than 15cm deep over 50% of area	
Basin / floodplain mire	NVC type S28	Extent	Area (ha)	No loss without prior consent	

(E32 / E33)					
		Sward composition	Vegetation cover	At least 75%	
			Frequency of <i>Phalaris arundinacea</i>	Dominant throughout	
			Frequency of <i>Epilobium hirsutum</i> and <i>Urtica dioica</i>	Neither species more than occasional	
			Frequency or cover of tree / scrub spp.	No more than 5% cover, if in discrete stands, or no more than occasional throughout the sward	
		Sward structure †	Vegetation height	>80cm	
			Litter in a more or less continuous layer	No more than 15cm deep over 50% of area	

† Discretionary attribute/measure/target

***Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*)**

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Unimproved marshy grassland	M24	*Extent	Total area (ha), mapped in relation to baseline (ie first available map of interest feature when/after notified), in period early June - end of August, measured annually if possible.	No reduction in area and any consequent fragmentation without prior consent	Recoverable reduction = unfavourable; non-recoverable reduction = partially destroyed. Temporary reductions related to natural variation in hydrological conditions should be noted as such where information allows.
		*Sward composition: positive	Record the frequency of positive indicator species from the list below to give an overall total of 2 frequent and 3 occasional. Record in	Overall total of at least two species/taxa frequent plus at least three species occasional	Choice of species related to NVC type, restriction to unimproved grassland and

		indicator species	<p>period early June - end of August, measured annually if possible.</p> <p><i>These species have been recorded from the site. A species list was not made for the Molinia beds themselves. Anagallis tenella, Angelica sylvestris, Carum verticillatum (not present in 1965 survey), Cirsium dissectum, Erica tetralix (not mentioned in 1965 survey), Eupatorium cannabinum, Filipendula ulmaria, Galium uliginosum/Galium palustre, Lotus pedunculatus, Narthecium ossifragum (not mentioned in 1965 survey), Orchidaceae spp., Pedicularis sylvatica (not mentioned in 1965 survey), Potentilla erecta, Serratula tinctoria (not mentioned in 1965 survey), small blue-green Carex spp. (leaves less than 5mm wide) (C. flacca, C. nigra, C. panicea), Sphagnum spp (not mentioned in 1965 survey), Succisa pratensis, Valeriana dioica, Valeriana officinalis, Viola palustris (not mentioned in 1965 survey).</i></p>	throughout the sward.	wetness characteristics of habitat, all satisfactory when inside target. Among possible species that could be used, choice further restricted by ease of identification, visibility in recording period.
		*Sward composition: frequency and cover of <i>Molinia caerulea</i>	Record the frequency and % cover of <i>Molinia caerulea</i> . Record in period early June - end of August, measured annually if possible.	At least frequent throughout the sward but no more than 80% cover	<i>Molinia</i> is a characteristic component of the community and should thus be at least frequent. However, increasing cover exceeding upper target is indicative of insufficient management by grazing or cutting.
		*Sward composition: negative indicator species	<p>Record the frequency and % cover of negative indicator species. Record in period early June-end of August, measured annually if possible.</p> <p><i>Cirsium arvense, Cirsium vulgare, Rumex crispus (not mentioned in 1965 survey), Rumex obtusifolius (not mentioned in 1965 survey), Urtica dioica.</i></p>	No species more than occasional throughout the sward or singly or together more than 5% cover	Invasive species chosen to indicate problems of eutrophication and disturbance from various sources when outside target eg poaching, stock feeding.
		*Sward	Record the % cover of <i>Juncus</i> species from	All species combined no more	<i>Juncus spp</i> can be characteristic

		composition: cover of <i>Juncus</i> spp	groups A and B. Record in period early June - end of August, measured annually if possible. Group A: jointed rushes (<i>Juncus acutiflorus</i> , <i>J. articulatus</i> , <i>J. subnodulosus</i>) Group B: <i>Juncus conglomeratus</i> , <i>J. effusus</i> and <i>J. inflexus</i> .	than 80% cover, of which no more than 50% made up of spp. from Group B	components of the community However, increasing cover is indicative of insufficient management by grazing or cutting. Group B species may indicate problems of eutrophication from various sources when outside target eg stock feeding, fertiliser use.
		*Sward composition: negative indicator species.	Record the % cover of negative indicator species. Record in period early June - end of August, measured annually if possible. <i>Cirsium palustre</i> .	No more than 20% cover.	This species may be indicative of disturbance from various sources when outside target eg poaching, stock feeding.
		*Sward composition: negative indicator species.	Record the % cover of negative indicator species. Record in period early June - end of August, measured annually if possible. <i>Deschampsia cespitosa</i> (not mentioned in 1965 survey)	No more than 10% cover.	Increasing cover of <i>Deschampsia cespitosa</i> outside target may be indicative of insufficient management by grazing or cutting, overgrazing, disturbance by excessive poaching or altered hydrology eg reduced water movement in the soil profile during the year resulting in anaerobic conditions. Increasing cover may lead to reduced species richness in the community.
		*Sward composition: negative indicator species	Record the % cover or frequency of negative indicator species in period early June - end of August, measured annually if possible. All tree and scrub species excluding <i>Salix repens</i> (not mentioned in 1965 survey) and <i>Myrica gale</i> (not mentioned in 1965 survey), considered together. NB If scrub/tree species in pastures are more than occasional throughout the sward but less than 5% cover, they are soon likely to become a problem if grazing levels are not sufficient or if scrub control is not being carried out.	No more than 5% cover.	Invasive species outside target shows that habitat is not being managed sufficiently eg lack of or insufficient grazing/cutting

		*Sward composition: % cover of <i>Phragmites australis</i>	Record the % cover of <i>Phragmites australis</i> in period early June - end of August, measured annually if possible.	No more than 10% cover.	Increasing cover of <i>Phragmites australis</i> outside target may be indicative of insufficient management by grazing or cutting. Lack of management may ultimately convert the community to tall-fen in some geographical areas.
		Sward composition: % cover of <i>Myrica gale</i> .	Record the % cover of <i>Myrica gale</i> (<i>not mentioned in 1965 survey</i>) in period early June - end of August, measured annually if possible. V Rare in a Suffolk context.	No more than 10% cover	If <i>Myrica</i> cover outside target this shows that habitat is not being managed sufficiently eg lack of or insufficient grazing/cutting
		Sward composition: negative indicator species.	Record the % cover of negative indicator species. Record in period early June - end of August, measured annually if possible. <i>Senecio aquaticus</i> (<i>not mentioned in 1965 survey</i>)	No more than occasional throughout the sward	Outside target can discourage hay/grazing management because the species is believed to be toxic to livestock, and is palatable when dry.
		Sward structure: average height	Record sward height in period early June - end of August, measured annually if possible. (Upper target refers to pastures only.)	M24a Sward greater than 5 cm (excluding <i>Juncus</i> spp.) but no more than 25% over 60 cm	Sward height above upper target shows that habitat is not being managed sufficiently eg lack of or insufficient grazing or if below lower target, is being overgrazed.
		Sward structure: litter	Record cover of litter where in a more or less continuous layer, distributed either in patches or in one larger area. Record in period early June - end of August for pastures, measured annually if possible.	Total extent no more than 25% of the sward	Outside target indicates biomass removal is insufficient eg lack of or insufficient grazing or not cut for hay.
		Sward structure: bare ground	Record extent of bare ground distributed through the sward, noticeable without disturbing the vegetation. Record in period early June - end of August, measured annually if possible	No more than 10% cover	Outside target indicates problems with stock management eg poaching, supplementary feeding.

† Discretionary attribute/measure/target



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pSPA: Breckland
cSAC: Breckland
Component SSSI: Berner's Heath, Icklingham

Conservation objective for the European Interest on the SSSI

The conservation objectives for the European interests on the SSSI are :

to maintain*, in favourable condition, the:

European dry heaths

Semi-natural dry grasslands and scrubland facies: on calcareous substrates (*Festuco-Brometalia*)

to maintain*, in favourable condition, the habitats for the populations of the Annex 1 species⁺, of European importance, with particular reference to:

- heathland
- acid grassland
- chalk grassland and/or inland dune communities

+ Stone curlew, Woodlark, Nightjar

* maintenance implies restoration if the feature is not currently in favourable condition.

The Conservation Objectives for Breckland proposed Special Protection Area and Breckland candidate Special Area of Conservation are, in accordance with para C 10 of PPG 9, the reasons for which the pSPA was proposed and the SAC designated .

The Breckland cSAC and the Breckland pSPA include land within:

Barnhamcross Common SSSI	Gooderstone Warren SSSI
Berner's Heath, Icklingham SSSI	Grime's Graves SSSI
Bridgham and Brettenham Heaths SSSI	Lakenheath Warren SSSI
Cavenham - Icklingham Heaths SSSI	Stanford Training Area SSSI
Cranwich Camp SSSI	Thetford Golf Course and Marsh SSSI
Deadman's Grave, Icklingham SSSI	Thetford Heath SSSI
East Wretham Heath SSSI	Wangford Warren and Carr SSSI
Field Barn Heaths, Hilborough SSSI	Weather and Horn Heaths SSSI
Foxhole Heath, Eriswell SSSI	Weeting Heath SSSI

The Breckland cSAC also includes land within:

Maidencross Hill SSSI	RAF Lakenheath SSSI
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The Breckland pSPA also includes land within

Barnham Heath SSSI	Little Heath, Barnham SSSI
Beeches Pit, West Stow SSSI	Old Bodney Camp SSSI
Cranberry Rough, Hockham SSSI	Rex Graham Reserve SSSI
Eriswell Low Warren SSSI	Warren Hill SSSI
High Lodge, Mildenhall SSSI	West Stow Heath SSSI
How Hill Track SSSI	

The Favourable Condition Table will be used by English Nature and other relevant authorities to determine if a site is in favourable condition. Favourable condition is achieved when the targets given below are met.

The favourable condition table should inform the scope and nature of any 'appropriate assessment' under the Habitats Regulations, but an appropriate assessment will also require consideration of issues specific to the individual plan or project. The favourable condition table does not by itself provide a comprehensive basis on which to assess plans and projects as required under Regulations 20-21, 24, 48-50 and 54 - 85. The scope and content of an appropriate assessment will depend upon the location, size and significance of the proposed project. English Nature will advise on a case by case basis.

Following an appropriate assessment, competent authorities are required to ascertain the effect on the integrity of the site. The integrity of the site is defined in para C10 of PPG9 as the coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified. The determination of favourable condition is separate from the judgement of effect upon integrity. For example, there may be a time-lag between a plan or project being initiated and a consequent adverse effect upon integrity becoming manifest in the condition assessment. In such cases, a plan or project may have an adverse effect upon integrity even though the site remains in favourable condition.

Annual counts for qualifying bird species will be used by English Nature, in the context of five year peak means, together with available information on UK population and distribution trends, to assess whether the SPA is continuing to make an appropriate contribution to the Favourable Conservation Status of the species across Europe.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Dry heathland	H1	Extent	Total area over 100ha mapped by Smith(1995). Measure every two years if it is possible.[In specific cases see if there is a radical difference between cSAC and SSSI baseline, in which case discuss with specialist.]	Maintain existing area on its current sites	This community is confined to base-poor and oligotrophic sandy soils in the more continental lowlands of Eastern England. Large areas have been lost or fragmented to agriculture and forestry in the past.
		Bare ground	'Natural' bare ground (mineral soil) in intimate mosaic within vegetation 'Recreation' heavily used paralleling paths	'Natural' between 10-25% 'Heavily disturbed' <1%	Bryophytes and lichens are more extensive and diverse amongst open cover of <i>Calluna</i> . [Sandy profiles can be found in coastal and a few inland dune systems, where there is, or has been, mobile sand.]
		Vegetation Structure	Record percentage of cover of <i>Calluna vulgaris</i> in different stages of its life cycle.	Cover of <i>Calluna vulgaris</i> to be between 25% minimum and 90% maximum. Mosaic with >10% young and 30-50% mature / degenerate <i>Calluna vulgaris</i> within unit. < 25% <i>Ulex europaeus</i>	<i>Calluna vulgaris</i> is often the only woody species present. Its cover and height are very variable. Grasses, when they occur, are present as scattered tussocks. <i>Ulex europaeus</i> is uncommon and restricted to disturbed areas.
		Vegetation Composition	Record frequency of any of the following species when present: List A <i>Calluna vulgaris</i> List B <i>Agrostis capillaris</i> , <i>Festuca ovina</i> , <i>Deschampsia flexuosa</i>	All species from List A must be at least frequent. At least two species of list B are at least occasional	Associated flora is for the most part confined to areas between <i>Calluna</i> clumps and the centre of collapsing bushes.
		Negative indicators	Record frequency and percentage cover of any of the following species when present: <i>Pteridium aquilinum</i> <i>Rhododendron ponticum</i>	< 50 % cover degenerate/dead <i>Calluna vulgaris</i> No <i>Rhododendron</i>	<i>Rhododendron ponticum</i> and <i>Gaultheria shallon</i> can spread rapidly and have a negligible nature conservation value. Dense rhododendron casts deep shade which

			<i>Rubus</i> spp. <i>Senecio</i> spp. <i>Urtica dioica</i> <i>Pinus</i> spp. <i>Betula</i> spp. <i>Quercus</i> spp. <i>Cirsium arvense</i> <i>Cirsium vulgare</i> <i>Deschampsia flexuosa</i>	<i>ponticum</i> < 1 % <i>Rubus</i> spp., <i>Senecio</i> spp., <i>Urtica</i> <i>dioica</i> , <i>Cirsium</i> spp. < 5% trees, tree seedlings or other species of scrub. < 25% <i>Pteridium</i> <i>aquilinum</i> < 25% <i>Deschampsia</i> <i>flexuosa</i>	excludes other vegetation. Scrub (shrubs, trees or tree seedlings) above 1 m in height is an important component of the heathland but its cover should be stable or not increasing as a whole. Management of bracken should be directed more to control than eradication.
			Record presence of signs of overgrazing, e.g. carpet, topiary or drumstick heather forms	No presence of signs of overgrazing.	Although lowland heathlands tend to be more under-grazed than over-grazed, localized overgrazing may occur. Management may need to be modified to tackle these situations.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
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Unimproved calcareous grassland	CG7b	*Extent	Total area (ha), mapped in relation to a site-specific reference level to be determined (but not likely to be >1 ha), in period end April-mid July.	No reduction in area and any consequent fragmentation without prior consent	Recoverable reduction = unfavourable; non-recoverable reduction = partially destroyed. Excludes bare ground associated with rabbit warrens (see below).
		*Sward composition: positive indicator species	Record the frequency of positive indicator species in period end April-mid July. <i>Aira</i> spp., <i>Aphanes</i> spp., <i>Astragalus danicus</i> , <i>Centaureum erythraea</i> , <i>Cladonia</i> spp, <i>Dianthus deltoides</i> , <i>Erigeron acer</i> , <i>Erodium cicutarium</i> , <i>Fragaria vesca</i> , <i>Galium verum</i> , <i>Helianthemum nummularium</i> , <i>Leontodon hispidus/L. saxatilis</i> , <i>Lotus corniculatus</i> , <i>Ornithopus perpusillus</i> , <i>Pilosella officinarum (Hieracium pilosella)</i> , <i>Plantago coronopus</i> , <i>Rumex acetosella</i> , <i>Sedum acre</i> , <i>Teesdalia nudicaulis</i> , <i>Thymus</i> spp.	At least two species/taxa frequent and four species/taxa occasional throughout the sward	Choice of species related to NVC type and restriction to unimproved grassland, considered satisfactory when inside target. Among possible species that could be used, choice further restricted by ease of identification, visibility in recording period.
		*Sward composition: negative indicator species	Record the frequency and % cover of negative indicator species. Record in period end April-mid July. <i>Carduus nutans</i> , <i>Chamerion angustifolium</i> , <i>Cirsium arvense</i> , <i>Cirsium vulgare</i> , <i>Plantago major</i> , <i>Urtica dioica</i> .	No species/taxa more than occasional throughout the sward or singly or together more than 5% cover	Invasive species chosen to indicate problems of eutrophication and disturbance from various sources when outside target eg poaching, stock feeding.
		*Sward composition: negative indicator species	Record the frequency and % cover of all tree and scrub species excluding <i>Juniperus communis</i> , considered together, in period end April-mid July. NB If scrub/tree species are more than occasional throughout the sward but less than 5% cover, they	No more than 5% cover.	Invasive species outside target shows that habitat is not being managed sufficiently eg under-grazed.

			are soon likely to become a problem if grazing levels are not sufficient or if scrub control is not being carried out.		
		*Sward composition: negative indicator species	Record % cover of coarse grasses <i>eg Holcus lanatus, Dactylis glomerata</i> , in period end April-mid July.	No more than 10% cover	Invasive species chosen to indicate problem of eutrophication and insufficient removal of biomass <i>eg</i> under-grazing
		Sward composition: negative indicator species	Record frequency of <i>Senecio jacobaea</i> , in period end April-mid July.	No more than occasional throughout the sward	Frequency outside target indicates management problems <i>eg</i> over-grazing and trampling.
		Sward structure: average height	Record sward height in period end April-mid July.	Sward 5 cms or less	Outside target indicates insufficient grazing
		Sward structure: litter	Record cover of litter where in a more or less continuous layer, distributed either in patches or in one larger area, in period end April-mid July.	Total extent no more than 25% of the sward	Outside target indicates biomass removal is insufficient <i>eg</i> under-grazed.
		Sward structure: bare ground	Record extent of bare ground (not rock) distributed through the sward, visible without disturbing the vegetation, in period end April-mid July.	No more than 15% .	Outside target indicates management problem <i>eg</i> over-grazing.
		Sward structure: localized bare ground	Record extent of localized bare ground around rabbit warrens.	No more than 0.25 ha <i>ie</i> approximately 50x50 metres	Heavy rabbit grazing usually associated with this type but outside target indicates rabbit grazing and disturbance levels are too high.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
All habitats; heathland, acid grassland, chalk grassland and/or inland dune communities	Annex 1 populations of European importance: stone-curlew, nightjar, woodlark	Extent and distribution of habitat	Area, measured periodically (frequency to be determined)	No significant decrease from reference level.	Methodology for assessing target to be determined. Reference level to be determined.
	Annex 1 populations of	Disturbance	Reduction or displacement of birds, measured periodically (frequency to be determined)	No significant reduction or	Methodology for assessing target to be determined. Reference level to be determined.

	European importance: stone-curlew, nightjar, woodlark			displacement of birds attributable to human disturbance in relation to reference level.	
	Annex 1 population of European importance: stone-curlew	Food availability -	Abundance of soil and dung invertebrates, measured periodically (frequency to be determined)	Presence and abundance of prey species should not deviate significantly from reference level	Including e.g. beetles, grasshoppers, flies, earthworms, snails, slugs. Methodology for assessing target to be determined. Reference level to be determined.
	Annex 1 population of European importance: nightjar	Food availability	Abundance of night-flying insects, measured periodically (frequency to be determined).	Presence and abundance of prey species should not deviate significantly from reference level.	Moths and beetles are important for nightjar. Methodology for assessing target to be determined. Reference level to be determined.
	Annex 1 population of European importance: woodlark	Food availability	Abundance of ground-surface invertebrates, measured periodically (frequency to be determined).	Presence and abundance of prey species should not deviate from reference level.	Including e.g. spiders, weevils, caterpillars. Methodology for assessing target to be determined. Reference level to be determined.
	Annex 1 population of European importance: stone-curlew	Vegetation characteristics	Extent and proportions of patches of at least half-hectare with vegetation less than 2cm high and at least 10% bare ground and unrestricted views over 200m, patches of medium height vegetation for roosting, measured periodically (frequency to be determined).	No significant decrease in extent and proportions of patches of at least half-hectare with vegetation less than 2cm high and at least 10% bare ground	Methodology for assessing target to be determined. Reference level to be determined.

				and unrestricted views over 200m, patches of medium height vegetation for roosting, measured periodically; from reference level.	
	Annex 1 population of European importance: nightjar	Vegetation characteristics	Extent and proportions of open ground with predominantly low vegetation (feeding), bare patches (nesting), and sparse woodland / scrub cover (feeding, roosting) measured periodically (frequency to be determined).	No significant decrease in extent and proportions of open ground with predominantly low vegetation (feeding), bare patches (nesting), and sparse woodland / scrub cover (feeding, roosting) from reference level.	Nightjar require vegetation mostly of 20-60cm with frequent bare patches greater than 2m ² 10-20% bare ground (nesting) and less than 50% tree/scrub cover overall Reference level to be determined
	Annex 1 population of European importance: woodlark	Vegetation characteristics	Extent and proportions of mix of shrub / tree cover (display), short-medium vegetation and bare ground (feeding, roosting, nesting), measured periodically (frequency to be determined).	No significant decrease in extent and proportions of mix of shrub / tree cover (display), short-medium vegetation and bare ground (feeding, roosting, nesting).	Frequent bare patches under 0.5 ha within mosaic of short (under 5cm high) to medium (10-20cm high) ground vegetation, and small clumps of shrubs or trees. Methodology for assessing target to be determined. Reference level to be determined.

SLR/NS



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BENACRE TO EASTON BAVENTS SSSI
(Benacre to Easton Barents Lagoons cSAC)

Conservation objective for the European Interest on the SSSI

The conservation objective for the European interest on the SSSI is:

Subject to natural change, to maintain*, in favourable condition, the saline lagoon feature.

*** maintenance implies restoration if the feature is not currently in favourable condition.**

The Conservation Objective for Benacre to Easton Barents Lagoons cSAC is, in accordance with para C 10 of PPG 9, the reasons for which the SAC was classified/designated. The Conservation Objectives for the Benacre to Easton Barents European marine site were published by English Nature on 23 January 2001.

**Annex:
Favourable Condition Table**

FAVOURABLE CONDITION TABLE

The Favourable Condition Table will be used by English Nature and other relevant authorities to determine if a site is in favourable condition. Favourable condition is achieved when the targets given below are met.

The favourable condition table should inform the scope and nature of any ‘appropriate assessment’ under the Habitats Regulations, but an appropriate assessment will also require consideration of issues specific to the individual plan or project. The favourable condition table does not by itself provide a comprehensive basis on which to assess plans and projects as required under Regulations 20-21, 24, 48-50 and 54 - 85. The scope and content of an appropriate assessment will depend upon the location, size and significance of the proposed project. English Nature will advise on a case by case basis.

Following an appropriate assessment, competent authorities are required to ascertain the effect on the integrity of the site. The integrity of the site is defined in para C10 of PPG9 as the coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified. The determination of favourable condition is separate from the judgement of effect upon integrity. For example, there may be a time-lag between a plan or project being initiated and a consequent adverse effect upon integrity becoming manifest in the condition assessment. In such cases, a plan or project may have an adverse effect upon integrity even though the site remains in favourable condition.

BENACRE TO EASTON BAVENTS SSSI - Benacre to Easton Barents cSAC

Operational Feature (= ENSIS level 1)	Criteria Feature (ENSIS level 2)	Attribute	Measure	Target	Comments
Coastal Lagoon	Saline Lagoon	Extent of lagoon	<p>A) Area(ha) of lagoon basins, measured at least once per reporting cycle</p> <p>B) Area (ha) of water occupying the basin measured at least once during the reporting cycle at the same time of year (preferably in late winter/early spring and late summer)</p>	<p>A) No decrease in extent from established baseline, subject to natural change B) At least 60% of each basin filled with water at all states of the tide and all year</p> <p>The target is no net loss from 13.3ha.</p> <p>NB Decrease from 15.3ha in 1985 although individual lagoons have increased. Decrease largely natural. Surveys - summer (1985) and autumn (1996)]</p>	<p>A) Extent is an attribute on which reporting is required by the Habitats Directive. Extent influences both sensitivity of the habitat and (together with shape, i.e. length:breadth ratio) diversity of biological community. B) Critical to both the definition and maintenance of a lagoon, and the community of species it supports, is the retention of most or all of the water mass within the system at low water in the adjacent estuary or sea.</p> <p>The lagoon resource includes several sites, i.e. NW Denes Pool, NE Denes Pool, Easton Broad, (all percolation lagoons) and Benacre Broad and Covehithe Broad (both isolated lagoons). The lagoons on this site are separated from the sea by shingle banks. Inevitably there will be a reduction in the area of the lagoons caused by the natural progression of the shingle bank. The extent of several is under threat from <i>Phragmites</i> spread.</p> <p>All of the lagoons at the site are shallow with some variation both within and between different lagoons. At this site, extent of water is sufficient for the purposes of monitoring to not require monitoring of depth.</p> <p>In most cases the area recorded in past surveys is B). Extent of water in late winter/spring may be taken as the likely extent of the lagoon basin. Extent of water in late summer in lagoons with a shallow basin is likely to be less than the extent of the basin.</p>

		Isolating barrier -	Width of barrier measured at least once	No trend towards a decline in width of barrier, subject	The presence of an isolating barrier is fundamental to the structure and function of a saline lagoon (indeed the nature of the barrier and
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		presence and nature	during reporting cycle.	to natural change. Baseline surface indicates width at different sites of between 75m and 90m.	degree of separation from the sea defines the type of lagoon in the UK). The lagoons at this site are percolation or isolated (with some percolation) lagoons formed by enclosure of small estuary mouths complemented by gravel workings. The composition (sand and shingle), width and height of this barrier vary according to the weather (storminess) in combination with the height of the tides. The shingle ridge is sufficiently low to enable infrequent inundation at some sites.
		Salinity regime	Seasonal averages (‰) to be measured at least once during the reporting cycle (preferably in late winter/early spring and late summer to indicate seasonal low and high).	Average seasonal salinity, and seasonal maxima and minima, should not deviate significantly from an established baseline subject to natural change. See Bamber 1997 for known ranges for individual sites.	Salinity is critical to both the structure and function of a lagoon, e.g. in defining the habitat, contributing to diversity within a site, and determining what species are present. The evolution of a specialist lagoonal community appears to be related to intrinsic variation in salinity both in time (short-term - tidal, seasonal) and space. Target should be based on baseline survey during periods following different conditions of rainfall/drought and storm inundation.
		Species composition	Presence and abundance of composite species, measured at least once during the reporting cycle, measured at same time of year.	Presence and abundance of composite species should not deviate significantly from the established baseline, subject to natural change. Loss or decline of characteristic species, in particular, should trigger a management response.	Composite species are important contributors to the structure of the saline lagoon habitat. The community will reflect to varying degrees the structure and function of the habitat as a whole. Baseline survey provides a species checklist for the whole site which includes the following characteristic species, i.e. specially adapted or restricted to saline lagoons: <i>Gammarus insensibilis</i> , <i>Hydrobia ventrosa</i> , <i>Hydrobia neglecta</i> , <i>Idotea chelipes</i> , <i>Lekanesphaera hookeri</i> , <i>Nematostella vectensis</i> , <i>Chaetomorpha linum</i> and <i>Ruppia</i> spp. See Bamber (1997) for which particular components of the biota to focus on at each lagoon.



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pSPA: Breckland
Component SSSI: Barnham Heath

Conservation objective for the European Interest on the SSSI

The conservation objectives for the European interests on the SSSI are :

to maintain*, in favourable condition, the habitats for the populations of the Annex 1 species⁺, of European importance, with particular reference to

- heathland
- acid grassland
- chalk grassland and/or inland dune communities

⁺ Stone curlew

* maintenance implies restoration if the feature is not currently in favourable condition.

The Conservation Objectives for Breckland proposed Special Protection Area are, in accordance with para C 10 of PPG 9, the reasons for which the SPA was classified.

The Breckland pSPA includes land within:

Barnhamcross Common SSSI	High Lodge, Mildenhall SSSI
Barnham Heath SSSI	How Hill Track SSSI
Beeches Pit, West Stow SSSI	Lakenheath Warren SSSI
Berner's Heath, Icklingham SSSI	Little Heath, BarnhamSSSI
Bridgham and Brettenham Heaths SSSI	Old Bodney Camp SSSI
Cavenham - Icklingham Heaths SSSI	Rex Graham Reserve SSSI
Cranwich Camp SSSI	Stanford Training Area SSSI
Cranberry Rough, Hockham SSSI	Thetford Golf Course and Marsh SSSI
Deadman's Grave, Icklingham SSSI	Thetford Heath SSSI
East Wretham Heath SSSI	Wangford Warren and Carr SSSI
Eriswell Low Warren SSSI	Warren Hill SSSI
Field Barn Heaths, Hilborough SSSI	Weather and Horn Heaths SSSI
Foxhole Heath, Eriswell SSSI	Weeting Heath SSSI
Gooderstone Warren SSSI	West Stow Heath SSSI
Grime's Graves SSSI	

The Favourable Condition Table will be used by English Nature and other relevant authorities to determine if a site is in favourable condition. Favourable condition is achieved when the targets given below are met.

The favourable condition table should inform the scope and nature of any ‘appropriate assessment’ under the Habitats Regulations, but an appropriate assessment will also require consideration of issues specific to the individual plan or project. The favourable condition table does not by itself provide a comprehensive basis on which to assess plans and projects as required under Regulations 20-21, 24, 48-50 and 54 - 85. The scope and content of an appropriate assessment will depend upon the location, size and significance of the proposed project. English Nature will advise on a case by case basis.

Following an appropriate assessment, competent authorities are required to ascertain the effect on the integrity of the site. The integrity of the site is defined in para C10 of PPG9 as the coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified. The determination of favourable condition is separate from the judgement of effect upon integrity. For example, there may be a time-lag between a plan or project being initiated and a consequent adverse effect upon integrity becoming manifest in the condition assessment. In such cases, a plan or project may have an adverse effect upon integrity even though the site remains in favourable condition.

Annual counts for qualifying bird species will be used by English Nature, in the context of five year peak means, together with available information on UK population and distribution trends, to assess whether the SPA is continuing to make an appropriate contribution to the Favourable Conservation Status of the species across Europe.

Operational feature	Criteria feature	Attribute	Measure	Target	Comment
All habitats; heathland, acid grassland, chalk grassland	Annex 1 populations of European importance:	Extent and distribution of habitat	Area, measured periodically (frequency to be determined)	No significant decrease from reference level.	Methodology for assessing target to be determined. Reference level to be determined.

and/or inland dune communities	stone-curlew				
	Annex 1 populations of European importance: stone-curlew,	Disturbance	Reduction or displacement of birds, measured periodically (frequency to be determined)	No significant reduction or displacement of birds attributable to human disturbance in relation to reference level.	Methodology for assessing target to be determined. Reference level to be determined.
	Annex 1 population of European importance: stone-curlew	Food availability -	Abundance of soil and dung invertebrates, measured periodically (frequency to be determined)	Presence and abundance of prey species should not deviate significantly from reference level	Including e.g. beetles, grasshoppers, flies, earthworms, snails, slugs. Methodology for assessing target to be determined. Reference level to be determined.
	Annex 1 population of European importance: stone-curlew	Vegetation characteristics	Extent and proportions of patches of at least half-hectare with vegetation less than 2cm high and at least 10% bare ground and unrestricted views over 200m, patches of medium height vegetation for roosting, measured periodically (frequency to be determined).	No significant decrease in extent and proportions of patches of at least half-hectare with vegetation less than 2cm high and at least 10% bare ground and unrestricted views over 200m, patches of medium height vegetation for roosting, measured periodically; from reference level.	Methodology for assessing target to be determined. Reference level to be determined.



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pSPA: Breckland
cSAC: Breckland
Component SSSI: Barnhamcross Common

Conservation objective for the European Interest on the SSSI

The conservation objectives for the European interests on the SSSI are :

to maintain*, in favourable condition, the:

- Semi-natural dry grasslands and scrubland facies: on calcareous substrates (*Festuco-Brometalia*)

to maintain*, in favourable condition, the habitats for the populations of the Annex 1 bird species⁺, of European importance, with particular reference to:

- heathland
- acid grassland
- chalk grassland and/or inland dune communities

⁺ Woodlark

* maintenance implies restoration if the feature is not currently in favourable condition.

The Conservation Objectives for Breckland proposed Special Protection Area and Breckland candidate Special Area of Conservation are, in accordance with para C 10 of PPG 9, the reasons for which the pSPA was proposed and the cSAC designated .

The Breckland cSAC and the Breckland pSPA include land within:

Barnhamcross Common SSSI	Gooderstone Warren SSSI
Berner's Heath, Icklingham SSSI	Grime's Graves SSSI
Bridgham and Brettenham Heaths SSSI	Lakenheath Warren SSSI
Cavenham - Icklingham Heaths SSSI	Stanford Training Area SSSI
Cranwich Camp SSSI	Thetford Golf Course and Marsh SSSI
Deadman's Grave, Icklingham SSSI	Thetford Heath SSSI
East Wretham Heath SSSI	Wangford Warren and Carr SSSI
Field Barn Heaths, Hilborough SSSI	Weather and Horn Heaths SSSI
Foxhole Heath, Eriswell SSSI	Weeting Heath SSSI

The Breckland cSAC also includes land within:

Maidencross Hill SSSI	RAF Lakenheath SSSI
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The Breckland pSPA also includes land within

Barnham Heath SSSI	Little Heath, Barnham SSSI
Beeches Pit, West Stow SSSI	Old Bodney Camp SSSI
Cranberry Rough, Hockham SSSI	Rex Graham Reserve SSSI
Eriswell Low Warren SSSI	Warren Hill SSSI
High Lodge, Mildenhall SSSI	West Stow Heath SSSI
How Hill Track SSSI	

The Favourable Condition Table will be used by English Nature and other relevant authorities to determine if a site is in favourable condition. Favourable condition is achieved when the targets given below are met.

The favourable condition table should inform the scope and nature of any 'appropriate assessment' under the Habitats Regulations, but an appropriate assessment will also require consideration of issues specific to the individual plan or project. The favourable condition table does not by itself provide a comprehensive basis on which to assess plans and projects as required under Regulations 20-21, 24, 48-50 and 54 - 85. The scope and content of an appropriate assessment will depend upon the location, size and significance of the proposed project. English Nature will advise on a case by case basis.

Following an appropriate assessment, competent authorities are required to ascertain the effect on the integrity of the site. The integrity of the site is defined in para C10 of PPG9 as the coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified. The determination of favourable condition is separate from the judgement of effect upon integrity. For example, there may be a time-lag between a plan or project being initiated and a consequent adverse effect upon integrity becoming manifest in the condition assessment. In such cases, a plan or project may have an adverse effect upon integrity even though the site remains in favourable condition.

Annual counts for qualifying bird species will be used by English Nature, in the context of five year peak means, together with available information on UK population and distribution trends, to assess whether the SPA is continuing to make an appropriate contribution to the Favourable Conservation Status of the species across Europe.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Unimproved calcareous grassland	CG6, dry scrub transitions (MG1-related, CG2d-related)	*Extent	Total area (approx 1ha), as mapped by Moore (1993) and Smith/ESL (1998), in period May-July.	No reduction in area and any consequent fragmentation without prior consent	Recoverable reduction = unfavourable; non-recoverable reduction = partially destroyed. Excludes bare ground associated with rabbit warrens (see below).
		*Sward composition: positive indicator species	Record the frequency of positive indicator species in period May- July. <i>Agrimonia eupatoria, Centaurea nigra, Centaurea scabiosa, Clinopodium vulgare, Galium verum, Geranium sanguineum, Knautia arvensis, Lathyrus pratensis, Leontodon hispidus, Lotus corniculatus, Orchidaceae spp., Origanum vulgare, Pimpinella spp., Primula veris, Sanguisorba minor, Teucrium scorodonia, Thymus spp., Tragopogon pratensis.</i>	At least two species/taxa frequent and two species/taxa occasional throughout the sward	Choice of species related to NVC type and restriction to unimproved grassland, considered satisfactory when inside target. Among possible species that could be used, choice further restricted by ease of identification, visibility in recording period.
		*Sward composition: grass/herb ratio	Proportion of non-Graminae (“herbs”), in period May -July.	30-90%	Low proportion outside target indicates eutrophication, usually from fertilisers, or insufficient removal of biomass, leading to dominance by grasses.
		*Sward composition: negative indicator species	Record the frequency and % cover of negative indicator species. Record in period May-July. <i>Cirsium arvense, Cirsium vulgare, Rumex crispus, Rumex obtusifolius, Senecio jacobaea, Urtica dioica.</i>	No species/taxa more than occasional throughout the sward or singly or together more than 5% cover	Invasive species chosen to indicate problems of eutrophication and disturbance from various sources when outside target eg poaching, stock feeding.
		*Sward composition: negative indicator species	Record the frequency and % cover of all tree and scrub species excluding <i>Juniperus communis</i> , considered together, in period May-July. NB If scrub/tree species are frequent or more throughout the sward but less than 30% cover, they are soon likely to become a problem if grazing levels are not sufficient or if scrub control is not being carried out.	No more than 30% cover.	Invasive species outside target shows that habitat is not being managed sufficiently eg under-grazed.
		Sward structure: average height	Record sward height in period May-July.	Sward 5-50 cms.	Outside target indicates insufficient grazing or over-grazing.
		Sward structure: litter	Record cover of litter where in a more or less continuous layer, distributed either in patches or in one larger area, in period May-July.	Total extent no more than 50% of the sward	Outside target indicates biomass removal is insufficient eg under-grazed.
		Sward structure: bare ground	Record extent of bare ground (not rock) distributed through the sward, visible without disturbing the	No more than 10% .	Outside target indicates management problems eg over-grazing.

			vegetation, in period May-July.		
		Sward structure: localized bare ground	Record extent of localized bare ground around rabbit warrens.	No more than 0.05 ha ie approximately 20x20 metres	Outside target indicates rabbit grazing and disturbance levels are too high.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
All habitats; heathland, acid grassland, chalk grassland and/or inland dune communities	Annex 1 populations of European importance: woodlark	Extent and distribution of habitat	Area, measured periodically (frequency to be determined)	No significant decrease from reference level.	Methodology for assessing target to be determined. Reference level to be determined.
	Annex 1 populations of European importance: woodlark	Disturbance	Reduction or displacement of birds, measured periodically (frequency to be determined)	No significant reduction or displacement of birds attributable to human disturbance in relation to reference level.	Methodology for assessing target to be determined. Reference level to be determined.
	Annex 1 population of European importance: woodlark	Food availability	Abundance of ground-surface invertebrates, measured periodically (frequency to be determined).	Presence and abundance of prey species should not deviate from reference level.	Including e.g. spiders, weevils, caterpillars. Methodology for assessing target to be determined. Reference level to be determined.
	Annex 1 population of European importance: woodlark	Vegetation characteristics	Extent and proportions of mix of shrub / tree cover (display), short-medium vegetation and bare ground (feeding, roosting, nesting), measured periodically (frequency to be determined).	No significant decrease in extent and proportions of mix of shrub / tree cover (display), short-medium vegetation and bare ground (feeding, roosting, nesting).	Frequent bare patches under 0.5 ha within mosaic of short (under 5cm high) to medium (10-20cm high) ground vegetation, and small clumps of shrubs or trees. Methodology for assessing target to be determined. Reference level to be determined.

SLR/NS



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cSAC: The Broads
SPA: Broadland
Component SSSI: Barnby Broad and Marshes

Conservation objectives for the European Interest on the SSSI

The conservation objectives for the European interest on the SSSI are:

to maintain*, in favourable condition, the:

- Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior*.
- Calcareous fens with *Cladium mariscus* and species of the *Carex davallianae*.
- Natural eutrophic lakes with *Magnopotamion* or *Hydrocharition*-type vegetation.
- *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*).

to maintain*, in favourable condition, the habitats for the population of:

- Otter (*Lutra lutra*).
- Desmoulin's whorl snail (*Vertigo moulinsiana*).

to maintain*, in favourable condition, the habitats for the populations of Annex1 bird species⁺ of European importance with particular reference to:

- open water
- swamp
- fen
- lowland wet grassland with ditches and water bodies.

+Marsh harrier, Hen harrier, Whooper swan and Ruff.

to maintain*, in favourable condition, the habitats for the populations of migratory bird species⁺ of European importance with particular reference to:

- open water
- swamp
- fen
- lowland wet grassland with ditches and water bodies.

+ Pink-footed goose, Gadwall and Shoveler.

to maintain*, in favourable condition, the habitats of the populations of waterfowl that contribute to the wintering waterfowl assemblage of the Broadland SPA with particular reference to,

- open water
- swamp and fen and lowland wet grassland with ditches and water bodies.

* maintenance implies restoration if the feature is not currently in favourable condition.

The Conservation Objectives for The Broads candidate Special Area of Conservation and Broadland Special Protection Area are, in accordance with para C 10 of PPG 9, the reasons for which the cSAC was designated and the SPA classified. The entry of 30 January 1996 on the Register of European Sites gives the reasons for which the SPA was classified.

The **Broads cSAC** and **Broadland SPA** includes land within: Alderfen Broad SSSI, Ant Broads and Marshes SSSI, Barnby Broad and Marshes SSSI, Broad Fen, Dilham SSSI, Bure Broads and Marshes SSSI, Burgh Common and Muckfleet Marshes SSSI, Calthorpe Broad SSSI, Cantley Marshes SSSI, Crostwick Marsh SSSI, Decoy Carr, Acle SSSI, Ducan's Marsh, Claxton SSSI, Geldeston Meadows SSSI, Hall Farm Fen, Hemsby SSSI, Halvergate Marshes SSSI, Hardley Flood SSSI, Limpenhoe Meadows SSSI, Ludham-Potter Heigham Marshes SSSI, Poplar Farm Meadows, Langley SSSI, Priors Meadows, Hickling SSSI, Shallam Dyke Marshes, Thurne SSSI, Smallburgh Fen SSSI, Sprat's Water and Marshes, Carlton Colville SSSI, Stanley and Alder Carrs, Aldeby SSSI, Upper Thurne Broads and Marshes SSSI, Upton Broads and Marshes SSSI and Yare Broads and Marshes SSSI.

The **Broads cSAC** additionally includes land within: Damgate Marshes, Acle SSSI and Trinity Broads SSSI.

Favourable Condition Table for Barnby Broad and Marshes SSSI

The Favourable Condition Table will be used by English Nature and other relevant authorities to determine if a site is in favourable condition. Favourable condition is achieved when the targets given below are met.

The favourable condition table should inform the scope and nature of any ‘appropriate assessment’ under the Habitats Regulations, but an appropriate assessment will also require consideration of issues specific to the individual plan or project. The favourable condition table does not by itself provide a comprehensive basis on which to assess plans and projects as required under Regulations 20-21, 24, 48-50 and 54 - 85. The scope and content of an appropriate assessment will depend upon the location, size and significance of the proposed project. English Nature will advise on a case by case basis.

Following an appropriate assessment, competent authorities are required to ascertain the effect on the integrity of the site. The integrity of the site is defined in para C10 of PPG9 as the coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified. The determination of favourable condition is separate from the judgement of effect upon integrity. For example, there may be a time-lag between a plan or project being initiated and a consequent adverse effect upon integrity becoming manifest in the condition assessment. In such cases, a plan or project may have an adverse effect upon integrity even though the site remains in favourable condition.

Annual counts for qualifying bird species will be used by English Nature, in the context of five year peak means, together with available information on UK population and distribution trends, to assess whether the SPA is continuing to make an appropriate contribution to the Favourable Conservation Status of the species across Europe.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Calcareous fens with <i>Cladium mariscus</i> and species of the <i>Caricion davallianae</i> Floodplain/valley mire (E33)	NVC type S24 S25	Extent	Area (ha), measured periodically.	Maintain type and extent of NVC communities which are optimal for the interest feature. No significant decrease from reference level.	Map extent and position of main NVC communities, monitor every 5 years. Reference level to be determined.
		Sward composition	Frequency of <i>Cladium mariscus</i>	Maintain extent and abundance of <i>Cladium mariscus</i> .	Monitor <i>Cladium</i> every 5 years. Reference level to be determined.
			Floristic quality of <i>Phragmites australis</i> - <i>Peucedanum palustre</i> fen (S24) and <i>Phragmites australis</i> - <i>Eupatorium cannabinum</i> fen (S25) through the abundance of 'typical' species	Within the area occupied by target communities, the eponymous species and others of constancy V should be frequent.	Monitor every five years.
			Floristic quality of small sedge component of the vegetation	Maintain extent and abundance of small sedge component.	Monitor small sedge component every 5 years. Reference level to be determined
			Frequency or cover of tree / scrub spp.	No more than 5% cover, if in discrete stands, or no more than occasional throughout the sward	
			Sward structure	Extent of bare mud or peat visible without disturbing vegetation	No more than 5% of mire area
		Frequency of hoof prints		No more than occasional over the mire as a whole	

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		Water quality	Base rich, low fertility supply to vegetation	Maintain groundwater and other base rich-low nutrient water sources to the vegetation	These communities can be adversely affected by nutrient enrichment. In floodplain situations river water quality is critically important.
				Establish target base and NPK concentration and monitor annually.	It is important that irrigating waters are free from excessive plant nutrients. Reference level to be determined
		Water quantity	Hydrological regime.	Maintain appropriate hydrological regime to support recognised vegetation types. Reference level to be determined	Better understanding of the functioning of sites is required, including the importance of groundwater and piezometric head Install dipwells in a network or transect and measure at least bimonthly.
		Rare species.	Maintain or enhance populations of special or rare plant (and animal) species.	Species to be determined.	Identify special species and seek guidance in defining measures. Reference levels to be determined.
Molinia meadows on calcareous, peaty or clayey-silt-laden soils (<i>Molinion caeruleae</i>)	NVC type M24	Extent	Total area (ha), mapped in relation to a site-specific reference level to be determined, in period early June - end of August.	No reduction in area and any consequent fragmentation without prior consent	Recoverable reduction = unfavourable; non-recoverable reduction = partially destroyed. Temporary reductions related to natural variation in hydrological conditions should be noted as such where information allows.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Unimproved marshy grassland		Sward composition: positive indicator species	Record the frequency of positive indicator species from the list below to give an overall total of 2 frequent and 3 occasional. Record in period early June - end of August. <i>Anagallis tenella, Angelica sylvestris, Cirsium dissectum, Erica tetralix, Eupatorium cannabinum, Filipendula ulmaria, Galium uliginosum/ Galium palustre, Orchidaceae spp., Pedicularis sylvatica, Potentilla erecta, small blue-green Carex spp. (leaves less than 5mm wide) (C. flacca, C.nigra, C.panicea), Sphagnum spp., Succisa pratensis, Valeriana dioica, Valeriana officinalis , Viola palustris.</i>	Overall total of at least two species/taxa frequent plus at least three species/taxa occasional throughout the sward.	Choice of species related to NVC types, restriction to unimproved grassland and wetness characteristics of habitat, all satisfactory when inside target. Among possible species that could be used, choice further restricted by ease of identification, visibility in recording period.
		Sward composition: frequency and cover of <i>Molinia caerulea</i>	Record the frequency and % cover of <i>Molinia caerulea</i> . Record in period early June - end of August.	At least frequent throughout the sward but no more than 80% cover	<i>Molinia</i> is a characteristic component of the community and should thus be at least frequent. However, increasing cover exceeding upper target is indicative of insufficient management by grazing or cutting.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		Sward composition: negative indicator species	Record the frequency and % cover of negative indicator species. Record in period early June- end of August. <i>Cirsium arvense, Cirsium vulgare, Rumex crispus, Rumex obtusifolius, Urtica dioica.</i>	No species more than occasional throughout the sward or singly or together more than 5% cover	Invasive species chosen to indicate problems of eutrophication and disturbance from various sources when outside target eg poaching, stock feeding.
		Sward composition: cover of <i>Juncus</i> spp	Record the % cover of <i>Juncus</i> species from groups A and B. Record in period early June - end of August. Group A: jointed rushes (<i>Juncus acutiflorus, J. articulatus, J. subnodulosus</i>) Group B: <i>Juncus conglomeratus, J. effusus and J. inflexus.</i>	All species combined no more than 80% cover, of which no more than 50% made up of spp. from Group B	<i>Juncus</i> spp can be characteristic components of the communities. However, increasing cover is indicative of insufficient management by grazing or cutting and/or waterlogging. Group B species may indicate problems of eutrophication from various sources when outside target eg stock feeding, fertiliser use.
		*Sward composition: negative indicator species.	Record the % cover of negative indicator species. Record in period early June - end of August. <i>Cirsium palustre.</i>	No more than 20% cover.	This species may be indicative of disturbance from various sources when outside target eg poaching, stock feeding.
		*Sward composition: negative indicator species.	Record the % cover of negative indicator species. Record in period early June - end of August. <i>Deschampsia cespitosa</i>	No more than 10% cover.	Increasing cover of <i>Deschampsia cespitosa</i> outside target may be indicative of insufficient management by grazing or cutting, overgrazing, disturbance by excessive poaching or altered hydrology eg reduced water movement in the soil profile during the year resulting in anaerobic conditions. Increasing cover may lead to reduced species richness in the community.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		*Sward composition: negative indicator species	Record the % cover or frequency of negative indicator species in period early June - end of August. All tree and scrub species excluding <i>Salix repens</i> and <i>Myrica gale</i> , considered together. NB If scrub/tree species in pastures are more than occasional throughout the sward but less than 5% cover, they are soon likely to become a problem if grazing levels are not sufficient or if scrub control is not being carried out.	No more than 5% cover.	Invasive species outside target shows that habitat is not being managed sufficiently eg lack of or insufficient grazing/cutting
		*Sward composition: % cover of <i>Phragmites australis</i>	Record the % cover of <i>Phragmites australis</i> in period early June-end of August.	No more than 10% cover.	Increasing cover of <i>Phragmites australis</i> outside target may be indicative of insufficient management by grazing or cutting. Lack of management may ultimately convert the community to tall-fen in some geographical areas.
		Sward composition: % cover of <i>Myrica gale</i> .	Record the % cover of <i>Myrica gale</i> in period early June - end of August.	No more than 10% cover	If <i>Myrica</i> cover outside target this shows that habitat is not being managed sufficiently eg lack of or insufficient grazing/cutting

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		Sward composition: negative indicator species.	Record the frequency and % cover of negative indicator species. Record in period early June - end of August. <i>Senecio aquaticus</i>	No more than occasional throughout the sward or more than 5% cover	Outside target can discourage hay/grazing management because the species is toxic to livestock, and is palatable when dry.
		Sward structure: average height	Record sward height in period early June - end of August. (Upper target refers to pastures only.)	M24b, Sward 2 cm or greater (excluding <i>Juncus</i> spp.) but no more than 25% over 15 cm	Sward height above upper target shows that habitat is not being managed sufficiently eg lack of or insufficient grazing or if below lower target, is being overgrazed.
		Sward structure: litter	Record cover of litter where in a more or less continuous layer, distributed either in patches or in one larger area. Record in period early June - end of August for pastures.	Total extent no more than 25% of the sward	Outside target indicates biomass removal is insufficient eg lack of or insufficient grazing or not cut for hay.
		Sward structure: bare ground	Record extent of bare ground distributed through the sward, visible without disturbing the vegetation. Record in period early June - end of August.	No more than 10%	Outside target indicates problems with stock management eg poaching, supplementary feeding.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i>, <i>Alnion incanae</i>, <i>Salicion alvae</i>) Semi-natural woodland	Parts of NVC types W2 and W5 and 6)	Extent	Extent/location of stands	<p>No loss of ancient semi-natural stands</p> <p>At least current area of recent semi-natural stands maintained, although their location may alter.</p> <p>At least the area of ancient woodland retained</p>	<p>* Stand loss due to natural processes eg in minimum intervention stands may be acceptable.</p> <p>* A high proportion of this type of woodland may be recent and hence a dynamic interchange with open wet communities may occur.</p> <p>* Stand destruction may occur if the understorey and ground flora are irretrievably damaged even if the canopy remains intact.</p> <p>* Loss = 0.5 ha or 0.5% of the stand area, whichever is the smaller.</p> <p>* 20% canopy cover is conventionally taken as the lower limit for an area to be considered as woodland. Stands of willow scrub may pose difficulties of definition.</p> <p>* Area and location of stands may be assessed remotely or by site visit.</p>
		2. Natural processes and structural development	Age/size class variation within and between stands; presence of open space and old trees; dead wood lying on the ground; standing dead trees	<p>* At least the current level of structural diversity maintained.</p> <p>* Understorey (2-5m) present over at least 20% of total stand area</p> <p>* Ground flora present over at least 50% of area excluding temporary pool areas</p> <p>* Canopy cover present over 30-90 %</p>	<p>* Any changes leading to exceedance of these limits due to natural processes are likely to be acceptable.</p> <p>* There is generally a good structural variety in these stands although veteran trees may be under-represented because of past treatment and the unstable nature of some sites.</p> <p>* The ground flora may appear sparse, particularly where periodic flooding leaves areas of bare mud etc. Its composition may be variable (see attribute 5).</p> <p>* In coppiced stands a lower canopy cover (of standards) can be accepted.</p>

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
			Structures associated with the hydrological regime also need to be considered.	of stand area * Age class structure appropriate to the site, its history and management. * A minimum of 3 fallen lying trees or major branches per ha and 4 trees per ha allowed to die standing. * At least the current level of natural hydrological features should be maintained (channels, pools, periodic flooding)	* See JNCC guidance note for the sorts of age structure likely to be appropriate for different types of management regime. * Dead wood is often abundant but because there tend to be fewer big trees the size of the fallen wood is often small. Flooding may lead to local accumulations with other areas totally lacking fallen wood. * Assess this attribute by field survey. * Where possible the hydrological regime should be allowed to revert to a more natural state.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		3.Regeneration potential	Successful establishment of young stems in gaps or on the edge of a stand	<ul style="list-style-type: none"> * Signs of seedlings growing through to saplings to young trees at sufficient density to maintain canopy density over a 10 yr period (or equivalent regrowth from coppice stumps). * No planting in stands 	<ul style="list-style-type: none"> * A proportion of gaps at any one time may develop into permanent open space; equally some current permanent open space/glades may in time regenerate to closed canopy. * Regeneration may often occur on the edges of stands rather than in gaps within it. * In coppice most of the regeneration will be as stump regrowth. See JNCC Guidance Note on likely desirable levels of regeneration. * The minimum level of regeneration to be acceptable from a nature conservation viewpoint is likely to be much less than that needed where wood production is also an objective. * Assess this attribute by walking through the wood in spring/summer.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		4. Composition	Cover of native versus non-native species (all layers) Death, destruction or replacement of native woodland species through effects of non-native fauna or external unnatural factors	<ul style="list-style-type: none"> * At least the current level of site-native species maintained. * At least 90% of cover in any one layer of site-native or acceptable naturalised species. * Death, destruction or replacement of native woodland species through effects of introduced fauna or other external unnatural factors not more than 10% by number or area in a five year period. 	<ul style="list-style-type: none"> * In sites where there might be uncertainty as to what counts as site-native or as an acceptable naturalised species this must be made clear (eg the position of poplar). * Where cover in any one layer is less than 100% then the 90% target applies to the area actually covered by that layer. * Factors leading to the death or replacement of woodland species could include pollution, including eutrophication from adjacent farmland; new diseases (eg alder dieback). * Damage to species by non-native species that does not lead to their death or replacement by non woodland species (eg damage from squirrels to trees that non-the-less survive) is not necessarily unacceptable in nature conservation terms. * Excessive browsing/grazing by even native ungulates may be considered an unnatural external factor where it leads to undesirable shifts in the composition/structure of the stand, although this may be picked up by attributes 2 or 5 anyway. * Assess this attribute by a walk through the site.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		5. Species, habitats, structures characteristic of the site.	<p>Ground flora type</p> <p>Distinctive and desirable elements for a given site eg. locally uncommon species such as <i>Carex elata</i>; veteran trees or rich invertebrate assemblages.</p> <p>Patches of associated habitats and transitions eg to ash wood, open fen and open water</p>	<p>* 80% of ground flora cover referable to relevant NVC wet woodland community (W 2, 5 and 6)</p> <p>* Distinctive elements maintained at current levels and in current locations (where appropriate).</p> <p>* Patches and transitions maintained in extent and where appropriate location.</p>	<p>* Changes leading to these targets not being met may be acceptable where this is due to natural processes.</p> <p>* Distinctive elements and patches should be marked on maps for ease of checking in the field wherever possible.</p> <p>* If there are species groups/assemblages that cannot be assessed directly on a general site visit then surrogate features should be given where possible, eg dead wood concentrations for associated invertebrates.</p>

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
22.13 Natural eutrophic lakes with Magnopotamion or Hydrochariton type vegetation. Standing water	NVC types: A3 A9 A13 A4 Types '7', '8', '9' and '10' of the GB Standing Water Classification.	Extent of community.	Check extent of beds in July/August every 4 years.	Extensive beds of submerged macrophytes should be present. Maintain mixed community.	Submerged vegetation characterised by broad leaved <i>Potamogeton</i> species such as <i>Potamogeton perfoliatus</i> , <i>P lucens</i> , <i>P crispus</i> , <i>P natans</i> , <i>P x salicifolius</i> , <i>P coloratus</i> , <i>P polygonifolius</i> , <i>P gramineus</i> , <i>P. alpinus</i> and <i>Hydrocharition</i> type vegetation. <i>Hydrocharis morsus-ranae</i> is a very rare associate with the <i>Magnopotamion</i> in the UK. Its community components are present, however, mainly <i>Spirodela polyrhiza</i> , <i>Lemna minor</i> , <i>Hippuris vulgaris</i> , <i>Utricularia vulgaris</i> and <i>Apium inundatum</i> . Community should be mixed and no one species should be present above 40% level of total amount of macrophyte presence.
Ditch system		Extent of <i>Potamogeton</i> species <i>Magnopotamion</i> .	Check species presence in July/August every 4 years.	Maintain species presence of all <i>Magnopotamion</i> and fine leaved <i>Potamogetons</i> .	No one <i>Potamogeton</i> species should be present above 40% level of total amount or level of macrophyte presence (see Water Quality comment).
		Extent of nationally scarce or threatened species.	Establish population size and position of nationally scarce, rare or threatened species over a period of 3 years, on a quarterly basis; thereafter every two years in July/August.	Maintain presence of all nationally scarce, rare or threatened plant species.	Nationally scarce, rare or threatened species can vary in population size and extent due to temporal/seasonal changes in climate which affects physical variables such as water temperature.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		Water quality	Arrange for analysis of quarterly measurements of Total P for first three years; thereafter annually in July/August.	Maintain water quality particularly Total P levels. For southern systems 100 $\mu\text{g l}^{-1}$ or below down to 65 $\mu\text{g l}^{-1}$.	The variable targets for Total P reflects the geographical range of this trophic state. The target for Total P should be set for individual SAC's and an acceptable range established. Increases in Total P suggest a need to move from annual July/August check, back to more intensive quarterly samples to verify whether change is real. Also check for cover shifts of macrophytes and dominant presence of pollution tolerant species above 40% level such as <i>Potamogeton pectinatus</i> , <i>Myriophyllum spicatum</i> and/or <i>Ceratophyllum demersum</i> .
		Water quantity	Check lake levels during July/August.	Maintain hydrology of lake or ditch system.	Hydrology involves not only lake or ditch levels but flushing rates; prevent lowering or raising of lake or ditch level through modification of outfalls. With ditch systems aim for constant high water table throughout the year Water abstraction may represent a significant issue through the reduction of ground water and flushing flows into marginal ditch systems.
		Sediment	Check for excessive growths of individual macrophytes ie above 40%.	Maintain sediment quality and quantity.	Effects of increased macrophyte growth also relates to water quality; if this is at target levels, then enrichment of sediments is an issue if broad leaved <i>Potamogeton</i> species decline and fine leaved <i>Potamogeton pectinatus</i> increases above 40% level or <i>Myriophyllum spicatum</i> / <i>Ceratophyllum demersum</i> become dominant. Introduced fish and recreational use of site might through sediment disturbance move sites out of favourable condition. Check for increases in siltation from catchment use changes or changes in sewage treatment.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Lake, fen.	Otter <i>Lutra lutra</i>	Water quality	EA scale	"Good", with no pollution incidents	Refer to Environment Agency for data
		Flow rate	Mean annual flow rate	No reduction attributable to increased abstraction.	Data from Environment Agency
		Site integrity	Total area	No reduction of fragmentation of area	
		Fish stocks	EA assessment	Fish stocks appropriate to the nutrient status of the river No significant decline in fish biomass or species diversity	Refer to Environment Agency for sample data
		Disturbance	Extent of public access to river	No significant change to river or bankside usage; no significant development	
		Bankside cover	Proportion of bank lined with trees, scrub or other thick cover	No overall permanent decrease	Some change acceptable as long as it is appropriately mitigated
		Presence of otters	Signs of otters	Signs of otters found at least once per year	Use data from national or county surveys

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Lake, fens.	Desmoulin's whorl snail <i>Vertigo moulinsiana</i>	structure and composition of marginal vegetation	Length or area of stand of appropriate vegetation	The extent of suitable habitat should be maintained, compared to the extent on a baseline map, over appropriate lengths of river or area of fen or pool margin [length of river or area of fen or swamp, and number of sample stretches to be decided locally]. Suitable vegetation will be dense, unbroken stands of <i>Glyceria maxima</i> , <i>Carex riparia</i> , <i>C. acutiformis</i> , <i>C. paniculata</i> , <i>Cladium mariscus</i> and/or sparse <i>Phragmites</i> and <i>Phalaris arundinacea</i> .	It is expected that traditional and accepted river management will cause local deterioration of some stands but the aim is to ensure that habitat in appropriate condition is present at frequent intervals along a river corridor. The snail appears to be able to colonise new adjacent stands rapidly, and closely spaced, fragmented patches may provide acceptable conditions for this species. Habitat should be a suitable size and linked to rivers and waterways hydrologically and not separated by barriers such as mown paths.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Lake, fens.		water table	1. depth below ground level; 2 & 3. vegetation indicators of drying out.	1. Water table must be close to the surface so that the ground remains squelchy all year, i.e. never drying out, so that, even in high summer, water will rise when the soil is trodden. Winter flooding is permissible. 2. Not more than 10% (occasional on the DAFOR scale) replacement of preferred dominant species by dense tall reed or by plants of drier conditions, e.g. <i>Urtica dioica</i> , <i>Epilobium hirsutum</i> , and low grasses invading the litter layer, within pre-selected stands (as selected for	<i>V. mouliniana</i> requires highly humid conditions which are met by a high water table below the stands of vegetation in which it lives. Unfavourably wet conditions can result from prolonged flooding in summer or water penning being set too high. Current research (2000-01) will refine acceptable limits and measures for soil moisture. measuring extent). 3. Not more than 10% (occasional on the DAFOR scale) replacement of tall monocotyledons by plants preferring wetter conditions, e.g. <i>Rorippa nasturtium-aquaticum</i> , <i>Apium nodiflorum</i> and <i>Berula erecta</i> .
Lake, fens.		vegetation height	height of bulk of the vegetation	Average height of the stands no less than 50 cm.	<i>V. mouliniana</i> requires tall leaves on which it lives almost of the year. Heavy grazing and mowing may be detrimental if it removes most taller clumps.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Lake, fens.		shading by shrubs and trees (e.g. willow, alder)	proportion of habitat	Less than 10% increase in area of shade, compared to extent on the baseline map.	
Lake, fens.		water quality	Biological class - Environment Agency's General Quality Assessment scheme. Assess every 5 years River Ecosystem Class. Assess against Environment Agency monitoring results. Suspended solids	>='b' In addition, no drop in class from exiting situation. >= RE3 In addition, no drop in class from exiting situation.	Although the snail lives out of the water, water quality may influence vegetation structure and perhaps the microflora living on the leaf surfaces where the snail feeds, and chemical quality may directly affect the snail when it is submerged during floods. Future experience and research may indicate that these variables are inapplicable to <i>V. moulinsiana</i> . No values are given for suspended solids as this pollutant has no direct influence on the condition of the habitat for <i>moulinsiana</i> . No monitoring targets are set for hardness but assessments for projects must take account of the snail's need for water whose hardness must not fall below value expected for the catchment.
All habitats: Grassland Improved, Swamp, Marginal and Inundation, Standing Water	Annex 1 species of European importance and waterfowl assemblage including migratory species of European and national importance.	Extent of habitat.	Area (ha), measured periodically (frequency to be determined).	No significant decrease from reference level.	For all habitats for all qualifying species. Methodology for assessing target to be determined. Reference level to be determined.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		Disturbance in roosting and feeding areas	Reduction or displacement of birds, measured periodically (frequency to be determined).	No significant displacement of birds attributable to human disturbance in relation to reference level.	All qualifying breeding and wintering annex 1 and migratory species. Methodology for assessing target to be determined. Reference level to be determined.
All habitats: Grassland Improved, Swamp, Marginal and Inundation, Standing Water	Annex 1 species of European importance.	Food Availability	Abundance of live mammals and birds, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of food species year round in relation to reference level.	Small-medium sized mammals (voles, mice, rabbits) and birds (pipits to ducks) are important prey in the breeding season for marsh harriers and during the winter for hen harriers. Methodology for assessing target to be determined. Reference level to be determined.
Grassland Improved	Annex 1 species of European importance and migratory species of European and national importance.	Absence of obstruction to viewlines	Open terrain relatively free of obstructions (feeding, anti-predator, roosting), measured periodically (frequency to be determined).	No significant reduction in view-lines in feeding and roosting areas during the winter season.	Whooper swan, pink-footed goose and white-fronted goose and wigeon prefer unrestricted views over 500 metres. Ruff prefer unrestricted views over 200 metres. Methodology for assessing target to be determined.
Grassland Improved	Annex 1 species of European importance.	Food Availability	Presence and abundance of soil and ground surface invertebrates, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of prey species during the winter season in relation to reference level.	Dipteran flies, beetles and earthworms are important for Ruff. Methodology for assessing target to be determined. Reference level to be determined.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Grassland Improved	Annex 1 species of European importance and migratory species of European and national importance.	Food availability	Presence and abundance of soft leaved plants , measured periodically (frequency to be determined).	No significant reduction in presence and abundance of food species during the winter season in relation to reference level.	<p><i>Lolium perenne</i>, <i>Glyceria fluitans</i>, <i>Phleum pratense</i>, <i>Rorippa amphibia</i>, <i>Alopecurus geniculatus</i> for whooper swan.</p> <p><i>Trifolium repens</i>, <i>Poa pratensis</i> and <i>Alopecurus geniculatus</i> are important for pink-footed goose.</p> <p><i>Trifolium repens</i>, <i>Lolium perenne</i>, <i>Poa trivialis</i> and <i>Holcus lanatus</i> are important for white-fronted goose.</p> <p><i>Lolium</i>, <i>Glyceria</i>, <i>Agrostis</i> and <i>Alopecurus spp.</i> for wigeon.</p> <p>Methodology for assessing target to be determined. Reference level to be determined.</p>
Grassland Improved	Annex 1 species of European importance and migratory species of European and national importance.	Vegetation characteristics	Predominantly short grassland swards (feeding and roosting during the winter period), measured periodically (frequency to be determined).	Vegetation height throughout areas used for feeding and roosting during the winter season should not deviate significantly.	<p>Pink-footed goose and white-fronted goose require a sward height 10-20 cm within feeding areas during the winter season.</p> <p>Whooper swan require a sward height <10 cm within feeding areas during the winter season.</p> <p>Ruff require a vegetation height of <10cm within roostin areas during the winter season.</p> <p>Wigeon require a sward height <5 cm within feeding areas during the winter season.</p> <p>Methodology for assessing target to be determined.</p>

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Grassland Improved	Nationally important migratory species.	Proximity of roosting areas to feeding areas	Roosting areas close to feeding areas, measured periodically (frequency to be determined).	No significant reduction in proximity of roosting areas to feeding areas during the winter season.	Wigeon require daytime feeding areas and roosting areas within c50 metres of each other. Methodology for assessing target to be determined.
Grassland Improved	Annex 1 species of European importance.	Hydrology/ Flow	Wet fields with surface pools, measured periodically (frequency to be determined).	No significant reduction in soggy or flooded areas during the winter season.	Ruff prefer permanently wet and flooded areas with a water depth of <3 cm. Methodology for assessing target to be determined.
Swamp, Marginal and Inundation	Annex 1 species of European importance.	Landscape	Large, unbroken expanse of emergent vegetation (nesting, feeding, concealment), measured periodically (frequency to be determined).	No significant reduction in expanse of emergent vegetation year round.	Marsh Harrier require continuous reed over >20ha. Methodology for assessing target to be determined.
Swamp, Marginal and inundation	Annex 1 species of European importance.	Water depth	Shallow water within reeds, measured periodically (frequency to be determined).	Water depth and extent of shallows within reeds should not deviate significantly year round.	Marsh harrier require water throughout the reedbed of 10-30cm. Methodology for assessing target to be determined.
Swamp, Marginal and Inundation	Annex 1 species of European importance.	Hydrology flow	Stable Water levels, measured periodically (frequency to be determined).	Water levels should not deviate significantly during the breeding season.	<10cm fluctuation is required during the breeding season for Marsh Harrier. Methodology for assessing target to be determined.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Standing Water	Migratory species of European and national importance.	Food Availability	Presence and abundance of aquatic plants, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of food species during the winter season in relation to reference level.	<p><i>Glyceria fluitans</i>, <i>Agrostis stolonifera</i>, <i>Chara</i>, <i>Potamogeton</i> and <i>Ceratophyllum spp</i> for gadwall.</p> <p><i>Scirpus</i>, <i>Eleocharis</i>, <i>Carex</i>, <i>Potamogeton</i> and <i>Glyceria</i> for shoveler.</p> <p><i>Chara</i>, <i>Nitella</i> and <i>Potamogeton spp.</i> are important for pochard and tufted duck.</p> <p><i>Chara</i>, <i>Cladophora</i>, <i>Potamogeton</i>, <i>Ruppia</i>, <i>Ranunculus</i> and <i>Elodea</i> are important for Coot.</p> <p>Methodology for assessing target to be determined. Reference level to be determined.</p>
Standing Water	Nationally important migratory species.	Food Availability	Presence and abundance of seed bearing plants, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of food species during the winter season in relation to reference level.	<p><i>Polygonum</i>, <i>Eleocharis</i>, <i>Rumex</i> and <i>Ranunculus</i> are important for Teal.</p> <p>Methodology for assessing target to be determined. Reference level to be determined.</p>
Standing Water	Migratory species of European and national importance.	Food availability	Presence and abundance of aquatic invertebrates, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of prey species during the winter season in relation to reference level.	<p>Hydrobia, crustaceans, caddisflies, diptera and beetles are important for shoveler.</p> <p>Hydrobia, flies, caddisfly, beetles and bugs are important for teal.</p> <p>Methodology for assessing target to be determined. Reference level to be determined.</p>

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Standing Water	Nationally important migratory species.	Food availability	Presence and abundance benthic invertebrates, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of prey species during the winter season in relation to reference level.	Chironomid larvae are important for pochard. <i>Dreissena polymorpha</i> , chironomid larvae, <i>Gammarus</i> and <i>Hydrobia</i> are important for tufted duck. Methodology for assessing target to be determined. Reference level to be determined.
Standing Water	Nationally important migratory species.	Food availability	Presence and abundance of surface and benthic invertebrates, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of prey species during the winter season in relation to reference level.	Mytilus, <i>Dreissena polymorpha</i> and caddis-fly larvae are important for coot. Methodology for assessing target to be determined. Reference level to be determined.
Standing Water	Nationally important migratory species.	Food availability	Presence and abundance of fish, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of prey species during the winter season in relation to reference level.	Fish of 3-21 cm are important for great crested grebe. Methodology for assessing target to be determined. Reference level to be determined.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Standing Water	Annex 1 species of European importance and migratory species of European and national importance.	Water depth	Areas of shallow medium and deep water (feeding), measured periodically (frequency to be determined).	Water depths should not deviate significantly during the winter season.	<p>Great crested grebe require a water depth of 1-3m.</p> <p>Whooper swan require a water depth of <1m.</p> <p>Gadwall require a water depth of <25cm. A kleptoparasitic relationship with Coot can allow Gadwall to potentially exploit deeper areas up to 2m in depth.</p> <p>Shoveler and teal require a water depth of <30cm.</p> <p>Coot require a water depth of 0.5-2m.</p> <p>Pochard and tufted duck require a water depth of 2-5m.</p> <p>Methodology for assessing target to be determined.</p>
Standing Water	Annex 1 species of European importance.	Water area	Large open areas of water (feeding), measured periodically (frequency to be determined).	No significant reduction in the area of open water for feeding year round.	<p>Bittern require one or more freshwater pools of >0.5ha not exceeding 20% of reedbed area overall.</p> <p>Methodology for assessing target to be determined.</p>
Standing Water	Migratory species of national importance.	Water area	Large open areas of water (feeding, roosting), measured periodically (frequency to be determined).	No significant reduction in the area of open water for feeding and roosting during the winter season.	<p>Pochard require one or more fresh waters of >6ha.</p> <p>Tufted duck require one or more freshwaters of >5ha.</p> <p>Coot require one or more freshwaters of >2ha.</p> <p>Great crested grebe require one or more freshwaters of >1ha.</p> <p>Methodology for assessing target to be determined.</p>

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Standing Water	Annex 1 species of European importance.	Hydrology/ Flow	Fluctuating water levels, measured periodically (frequency to be determined).	Range of water level fluctuation providing a succession of surface water areas (feeding) during the winter season.	Whooper swan require water levels fluctating by 5-15% per month. Methodology for assessing target to be determined.



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cSAC: Norfolk Valley Fens
Component SSSI: Badley Moor

Conservation objective for the European Interest on the SSSI

The conservation objectives for the European interests on the SSSI are:

to maintain*, in favourable condition, the:

- Alkaline fens
- *Molinia* meadows on chalk, peat, clay, or silt-laden soils (*Molinion caeruleae*)

* maintenance implies restoration if the feature is not currently in favourable condition.

The Conservation Objectives for Norfolk Valley Fens candidate Special Area of Conservation are, in accordance with para C10 of PPG 9, the reasons for which the cSAC was designated. The cSAC also includes land within Booton Common SSSI, Buxton Heath SSSI, Coston Fen, Runhall SSSI, East Walton and Adcock's Common SSSI, Flordon Common SSSI, Foulden Common SSSI, Great Cressingham Fen SSSI, Holt Lowes SSSI, Potter and Scarning Fens SSSI, Sheringham and Beeston Regis Common SSSI, Southrepps Common SSSI, Swangey Fen, Attleborough SSSI and Thompson Water, Carr and Common SSSI.

The favourable condition table will be used by English Nature to determine favourable condition and other relevant authorities to determine if a site is in favourable condition. Favourable condition is achieved when when the targets set out below are met.

The favourable condition table should inform the scope and nature of any ‘appropriate assessment’ under the Habitats Regulations, but an appropriate assessment will also require consideration of issues specific to the individual plan or project. The favourable condition table does not by itself provide a comprehensive basis on which to assess plans or projects as required under Regulations 20-21, 24, 48-50 and 54-85. The scope and content of an appropriate assessment will depend upon the location, size and significance of the proposed project. English Nature will advise on a case by case basis.

Following an appropriate assessment, competent authorities are required to ascertain the effect on the integrity of the site. The integrity of the site is defined in para. C10 of PPG9 as ‘the coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified. The determination of favourable condition is separate from the judgement of effect upon integrity. For example, there may be a time lag between a plan or project being initiated and a consequent adverse effect upon integrity being manifest in the condition assessment. In such cases, a plan or project may have an adverse effect upon integrity even though the site remains in favourable condition.

Operational feature	Criteria feature	Attributes	Measures	Targets	Comments
Spring and seepage-fed chalk-rich alkaline valley fen	M13 black bog rush - blunt flowered rush <i>Schoenus nigricans</i> - <i>Juncus subnodulosus</i> fen.	Extent	Extent identified in Norfolk Valley Fen NVC survey (Smart 1992-93)	Maintain as an absolute minimum baseline the overall area and extent identified by by Smart (1992-93).	Extent of fen communities may be subject to some natural dynamic variation, in response to extensive grazing pressure.
		Water quantity and quality	High piezometric head and permanently high water table (allowing for natural seasonal fluctuations) The spring water has low fertility and is rich in base ions.	Summer water levels (July-September) to fall no more than 10 cm below the surface.	
		Vegetation structure	Presence of varied sward structure with full range of vegetation heights, from close cropped to tall and ungrazed. Includes varying degrees of tussock height. Always includes elements of short pioneer fen vegetation	At height of summer (July August), fen vegetation to be typically no more than 0.5 metres tall, with random mosaic of differing vegetation and tussock heights across whole fen area.	As with extent, likely to be influenced by grazing regime, with vegetation responding to variable grazing pressure over time.
		Vegetation composition	Brown moss <i>Sphagnum spp.</i> carpets List A: <i>Schoenus nigricans</i> <i>Juncus subnodulosus</i> List B: <i>Pinguicula vulgaris</i> <i>Parnassia palustris</i> <i>Anagallis tenella</i> Orchid species	Low growing brown moss carpets to occupy between 5 and 15% of overall fen area. Both species in list A to be at least frequent. All species in list B to be at least occasional.	
Operational feature	Criteria feature	Attributes	Measures	Targets	Comments
		Negative indicators	<i>Phragmites australis</i> <i>Urtica dioica</i> <i>Salix cinerea</i> <i>Epilobium hirsutum</i> <i>Eupatorium cannabinum</i> <i>Fillipendula ulmaria</i>	Clumps of <i>Salix cinerea</i> to occupy no more than 5% of the overall fen area. All other species listed to be no more than rare in the overall fen area.	

Purple moor grass mire	M24 purple moor grass - meadow thistle <i>Molinia caerulea</i> - <i>Cirsium dissectum</i> fen meadow	Extent	Extent identified in Norfolk Valley Fen NVC survey (Smart 1992-93)	Maintain as an absolute minimum baseline the overall area and extent identified by Smart (1992-93).	Extent of fen communities may be subject to some natural dynamic variation, in response to extensive grazing pressure
		Sward composition: positive indicator species	The frequency of positive indicator species from the list below to give an overall total of 2 frequent and 3 occasional. <i>Anagallis tenella, Angelica sylvestris, Cirsium dissectum, Erica tetralix, Eupatorium cannabinum, Filipendula ulmaria, Galium uliginosum/ Galium palustre, Lotus pedunculatus, Orchidaceae spp., Pedicularis sylvatica, Potentilla erecta, sedges (C. flacca, C.nigra,C.panicea), Sphagnum spp., Succisa pratensis, Valeriana dioica, Viola palustris.</i>	Overall total of at least two species/taxa frequent plus at least three species/taxa are occasional throughout the sward. <i>Eupatorium cannabinum, Angelica sylvestris and Filipendula ulmaria</i> should be no more than occasional.	Choice of species related to NVC types, restriction to unimproved grassland and wetness characteristics of habitat, all satisfactory when inside target. Among possible species that could be used, choice further restricted by ease of identification, visibility in recording period.
Operational feature	Criteria feature	Attributes	Measures	Targets	Comments
		Sward composition: frequency and cover of <i>Molinia caerulea</i>	Record the frequency and % cover of <i>Molinia caerulea</i> . Record in period early June - end of August.	At least frequent throughout the sward but no more than 80% cover	<i>Molinia</i> is characteristic of the community and should be at least frequent. However, increasing cover exceeding upper target is indicative of insufficient management by grazing or cutting.
		*Sward composition: cover of <i>Juncus</i> spp	Record the % cover of <i>Juncus</i> species from groups A and B.	All species combined no more than 80% cover, of which no	<i>Juncus</i> spp can be characteristic components

			<p>Record in period early June - end of August.</p> <p>Group A: jointed rushes (<i>Juncus acutiflorus</i>, <i>J. articulatus</i>, <i>J. subnodulosus</i>)</p> <p>Group B: <i>Juncus conglomeratus</i>, <i>J. effusus</i> and <i>J. inflexus</i>.</p>	more than 50% made up of spp. from Group B	<p>of the communities. However, increasing cover is indicative of insufficient management by grazing or cutting and/or waterlogging. Group B species may indicate problems of eutrophication when outside target .</p>
		*Sward composition: negative indicator species.	<p>Record the % cover of negative indicator species. Record in period early June - end of August.</p> <p><i>Cirsium palustre.</i> <i>Deschampsia cespitosa</i> <i>Phragmites australis</i> <i>Salix cinerea</i> <i>Cirsium vulgare</i></p>		<p>Invasive species outside targets shows that habitat is not being managed sufficiently eg lack of or insufficient grazing/cutting</p>

		Sward structure: average height	Sward height in period early June - end of August. (Upper target refers to pastures only.)	M24a Sward 5 cm or greater (excluding <i>Juncus</i> spp.) but no more than 25% over 60 cm M24b, M24c Sward 2 cm or greater (excluding <i>Juncus</i> spp.) but no more than 25% over 15 cm	Sward height above upper target shows that habitat is not being managed sufficiently eg lack of or insufficient grazing or if below lower target, is being overgrazed.
		Sward structure: litter	Cover of litter where in a more or less continuous layer, distributed either in patches or in one larger area. Record in period early June - end of August for pastures.	Total extent no more than 20% of the sward	Outside target indicates biomass removal is insufficient eg lack of or insufficient grazing or not cut for hay.
		Sward structure: bare ground	Extent of bare ground distributed through the sward, visible without disturbing the vegetation. Record in period early June - end of August.	No more than 5%	Outside target indicates problems with stock management eg poaching, supplementary feeding.



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Breckland Farmland SSSI.

(part of Breckland potential Special Protection Area)

Conservation objective for the European interests of the SSSI

The conservation objective for the European interest on the SSSI is:

To maintain*, in favourable condition, the habitats for the internationally important population of Stone-curlew (*Burhinus oedicephalus*).

*** maintenance implies restoration if the feature is not currently in favourable condition.**

The Conservation Objectives for Breckland pSPA are, in accordance with para C 10 of PPG 9, the reasons for which the pSPA was classified. The entry of date on the Register of European Sites gives the reasons for which the SPA was classified.

Annex:

Favourable Condition Table

The Favourable Condition Table will be used by English Nature and other relevant authorities to determine if a site is in favourable condition. Favourable condition is achieved when the targets set out below are met.

The favourable condition table should inform the scope and nature of any ‘appropriate assessment’ under the Habitats Regulations, but an appropriate assessment will also require consideration of issues specific to the individual plan or project. The favourable condition table does not by itself provide a comprehensive basis on which to assess plans and projects as required under Regulations 20-21, 24, 48-50 and 54 to 85. The scope and content of an appropriate assessment will depend upon the location, size and significance of the proposed project. English Nature will advise on a case by case basis.

Following appropriate assessment, competent authorities are required to ascertain the effect on the integrity of the site. The integrity of the site is defined in para C10 of PPG9 as the coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified.

Annual counts for qualifying bird species will be used by English Nature, in the context of five year peak means, together with available information on UK population and distribution trends, to assess whether the SPA is continuing to make an appropriate contribution to the Favourable Conservation Status of the species across Europe.

Operational feature	Criteria feature	Attribute	Measure	Target	Comments
Arable land Heathland Grassland / pasture	Annex 1 populations of European importance: Stone-curlew	Extent of nesting habitat	Area of land suitable for nesting, measured periodically (frequency to be determined).	No significant decrease in area of suitable habitat from reference level.	<p>Important nesting habitat includes areas of reverted heathland and grassland as well as spring sown crops on arable land including; spring cereals, potatoes, linseed, maize, sugar beet, carrots and onions. Within these spring sown crops, cropping regimes should maintain the area of suitable nesting habitat required to support the qualifying Stone-curlew population. NB Ideally, stone-curlews require individual nest plots of 2 ha.</p> <p>The overall area of suitable habitat with the correct vegetation characteristics for nesting should not decrease from the reference level, although the distribution may change with cropping rotation (within and between seasons).</p> <p>Methodology for assessing target to be established. Reference level to be established.</p>
		Extent of foraging habitat	Area of land suitable for feeding, measured periodically (frequency to be determined).	No significant decrease in area of suitable habitat from reference level.	<p>Important foraging areas include spring sown crops, reverted heathland, grassland (tightly grazed semi-natural grassland- especially rabbit grazed and improved grassland - especially sheep pasture), outdoor pig units, manure fields and field margin game strips. Stone-curlews feed up to 2-3km from the nest site over a range of approximately 30ha, but mostly within 1km of the nest site when feeding young. Individual birds may forage over heathland habitats outside the SSSI, as well as on farmland. The extent of appropriate farmland habitat makes a critical contribution to the overall range of habitats required to support breeding stone-curlew.</p> <p>The total area of suitable habitat with the correct vegetation characteristics for feeding should not decrease from the reference level, although the distribution may change with cropping rotation (within and between seasons). As far as is possible, the proximity of farmland habitats to other non-farmland foraging habitats, such as heathland, should be considered.</p> <p>Methodology for assessing target to be established. Reference level to be established.</p>
		Food availability	Abundance of invertebrates from soil and dung, measured periodically (frequency to be determined).	Presence and abundance of prey species should not deviate significantly from reference level.	<p>Invertebrates including beetles, grasshoppers, flies, earthworm, snails and slugs are important for stone-curlews. The over-use of pesticides can cause direct mortality and emergence of contaminated soil invertebrates. The survival rates of stone-curlews breeding/feeding on arable farmland can be compared to birds breeding/feeding on heathland.</p> <p>Although important to the condition of the site, it may not prove possible to obtain a meaningful measure of prey availability by directly sampling invertebrate prey populations. Methodology for assessing target to be established. Reference level to be established.</p>
		Vegetation characteristics	Extent and proportions of open stony or sandy ground with sparse vegetation and bare soil (nesting and feeding) Measured periodically (frequency to be determined).	No significant decrease from reference level.	<p>Stone-curlew habitat is a mix of short semi-natural grassland, improved pasture and spring sown crops for feeding and nesting. Stone-curlews require unrestricted views over 200m, vegetation of <2cm tall, at least 10% bare stony ground and smaller patches of medium height vegetation for roosting (<30% cover overall 10-30cm). Patches of ideally 2ha (with vegetation less than 2cm high and unrestricted views over 200m) are required for nesting. Management that provides additional nest plots can be funded through a management agreement.</p> <p>Habitats with dense vegetation are not used for feeding. Improvements in crop husbandry (irrigation and pest control), reduce areas of sparsely vegetated tillage crops by mid summer. As crops grow up, management intervention is sometimes required to ensure the birds do not abandon nests and have adequate feeding areas for the young. The successful rearing of chicks relies on subsequent positive management as crops grow around the nest sites, which can also be achieved through a management agreement.</p> <p>Methodology for assessing target to be established.</p>
		Disturbance	Reduction or displacement of birds, measured periodically, (frequency to be determined).	No significant displacement or reduction of birds attributable to human disturbance in relation to reference level	<p>Stone-curlews are particularly sensitive to human disturbance and are particularly prone to deserting nests/chicks. Effective communication between Stone-curlew Recovery Project staff and farmers can prevent destruction of clutches and chicks by farming operations.</p> <p>Methodology for assessing target to be determined. Reference level to be established.</p>



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cSAC: The Broads
SPA: Broadland
Component SSSI: Bure Broads and Marshes

Conservation objectives for the European Interest on the SSSI

The conservation objectives for the European interest on the SSSI are:

to maintain*, in favourable condition, the:

- Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior*.
- Calcareous fens with *Cladium mariscus* and species of the *Carex davalliana*.
- Natural eutrophic lakes with *Magnopotamion* or *Hydrocharition*-type vegetation.
- Hard oligo-mesotrophic waters with benthic vegetation of *Chara* spp..
- *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*)

to maintain*, in favourable condition, the habitats for the population of:

- Fen orchid (*Liparis loeselii*)
- Desmoulin's whorl snail (*Vertigo moulinsiana*).
- Otter (*Lutra lutra*).

to maintain*, in favourable condition, the habitats for the populations of Annex 1 bird species⁺ of European importance with particular reference to:

- open water
- swamp
- fen
- reedbed
- fen meadow with ditches and water bodies.

+Bittern, Marsh harrier, Hen harrier, Bewick's swan and Whooper swan.

to maintain*, in favourable condition, the habitats for the populations of migratory bird species[†] of European importance with particular reference to:

- swamp
- fen
- reedbed
- fen meadow with ditches and water bodies.

+ Gadwall and Shoveler.

to maintain*, in favourable condition, the habitats of the populations of waterfowl that contribute to the wintering waterfowl assemblage of European importance with particular reference to,

- open water
- wet woodland
- swamp and fen and fen meadow with ditches and water bodies.

* maintenance implies restoration if the feature is not currently in favourable condition.

The Conservation Objectives for The Broads candidate Special Area of Conservation and Broadland Special Protection Area are, in accordance with para C 10 of PPG 9, the reasons for which the cSAC was designated and the SPA classified. The entry of 30 January 1996 on the Register of European Sites gives the reasons for which the SPA was classified.

The **Broads cSAC** and **Broadland SPA** includes land within: Alderfen Broad SSSI, Ant Broads and Marshes SSSI, Barnby Broad and Marshes SSSI, Broad Fen, Dilham SSSI, Bure Broads and Marshes SSSI, Burgh Common and Muckfleet Marshes SSSI, Calthorpe Broad SSSI, Cantley Marshes SSSI, Crostwick Marsh SSSI, Decoy Carr, Acle SSSI, Ducan's Marsh, Claxton SSSI, Geldeston Meadows SSSI, Hall Farm Fen, Hemsby SSSI, Halvergate Marshes SSSI, Hardley Flood SSSI, Limpenhoe Meadows SSSI, Ludham-Potter Heigham Marshes SSSI, Poplar Farm Meadows, Langley SSSI, Priors Meadows, Hickling SSSI, Shallam Dyke Marshes, Thurne SSSI, Smallburgh Fen SSSI, Sprat's Water and Marshes, Carlton Colville SSSI, Stanley and Alder Carrs, Aldeby SSSI, Upper Thurne Broads and Marshes SSSI, Upton Broads and Marshes SSSI and Yare Broads and Marshes SSSI.

The **Broads cSAC** additionally includes land within: Damgate Marshes, Acle SSSI and Trinity Broads SSSI.

Favourable Condition Table for Bure Broads and Marshes SSSI

The Favourable Condition Table will be used by English Nature and other relevant authorities to determine if a site is in favourable condition. Favourable condition is achieved when the targets given below are met.

The favourable condition table should inform the scope and nature of any 'appropriate assessment' under the Habitats Regulations, but an appropriate assessment will also require consideration of issues specific to the individual plan or project. The favourable condition table does not by itself provide a comprehensive basis on which to assess plans and projects as required under Regulations 20-21, 24, 48-50 and 54 - 85. The scope and content of an appropriate assessment will depend upon the location, size and significance of the proposed project. English Nature will advise on a case by case basis.

Following an appropriate assessment, competent authorities are required to ascertain the effect on the integrity of the site. The integrity of the site is defined in para C10 of PPG9 as the coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified. The determination of favourable condition is separate from the judgement of effect upon integrity. For example, there may be a time-lag between a plan or project being initiated and a consequent adverse effect upon integrity becoming manifest in the condition assessment. In such cases, a plan or project may have an adverse effect upon integrity even though the site remains in favourable condition.

Annual counts for qualifying bird species will be used by English Nature, in the context of five year peak means, together with available information on UK population and distribution trends, to assess whether the SPA is continuing to make an appropriate contribution to the Favourable Conservation Status of the species across Europe.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Calcareous fens with <i>Cladium mariscus</i> and species of the <i>Caricion davallianae</i> Floodplain/valley mire (E33)	NVC type S2 S24 S25	Extent	Area (ha), measured periodically.	Maintain type and extent of NVC communities which are optimal for the interest feature. No significant decrease from reference level.	Map extent and position of main NVC communities, monitor every 5 years. Reference level to be determined.
		Sward composition	Frequency of <i>Cladium mariscus</i>	Maintain extent and abundance of <i>Cladium mariscus</i> .	Monitor <i>Cladium</i> every 5 years. Reference level to be determined.
			Floristic quality of <i>Cladium mariscus</i> swamp (S2), <i>Phragmites australis</i> - <i>Peucedanum palustre</i> fen (S24) and <i>Phragmites australis</i> - <i>Eupatorium cannabinum</i> fen (S25) through the abundance of 'typical' species	Within the area occupied by target communities, the eponymous species and others of constancy V should be frequent.	Monitor every five years.
			Floristic quality of small sedge component of the vegetation	Maintain extent and abundance of small sedge component.	Monitor small sedge component every 5 years. Reference level to be determined
			Frequency or cover of tree / scrub spp.	No more than 5% cover, if in discrete stands, or no more than occasional throughout the sward	
			Sward structure	Extent of bare mud or peat visible without disturbing vegetation	No more than 5% of mire area

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
			Frequency of hoof prints	No more than occasional over the mire as a whole	
		Water quality	Base rich, low fertility supply to vegetation	Maintain groundwater and other base rich-low nutrient water sources to the vegetation	These communities can be adversely affected by nutrient enrichment. In floodplain situations river water quality is critically important.
				Establish target base and NPK concentration and monitor annually.	It is important that irrigating waters are free from excessive plant nutrients. Reference level to be determined
		Water quantity	Hydrological regime.	Maintain appropriate hydrological regime to support recognised vegetation types. Reference level to be determined	Better understanding of the functioning of sites is required, including the importance of groundwater and piezometric head Install dipwells in a network or transect and measure at least bimonthly.
		Water table	Level of water table for the S2 community	Within range -15 to +40cm, with standing water between tussocks	Install dipwells in a network or transect and measure at least bimonthly.
		Rare species.	Maintain or enhance populations of special or rare plant (and animal) species.	Species to be determined.	Identify special species and seek guidance in defining measures. Reference levels to be determined.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
<p>Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion, Alnion incanae, Salicion alvae</i>)</p> <p>Semi-natural woodland</p>	Parts of NVC types W2 and W5 and 6)	Extent	Extent/location of stands	<p>No loss of ancient semi-natural stands</p> <p>At least current area of recent semi-natural stands maintained, although their location may alter.</p> <p>At least the area of ancient woodland retained</p>	<p>* Stand loss due to natural processes eg in minimum intervention stands may be acceptable.</p> <p>* A high proportion of this type of woodland may be recent and hence a dynamic interchange with open wet communities may occur.</p> <p>* Stand destruction may occur if the understorey and ground flora are irretrievably damaged even if the canopy remains intact.</p> <p>* Loss = 0.5 ha or 0.5% of the stand area, whichever is the smaller.</p> <p>* 20% canopy cover is conventionally taken as the lower limit for an area to be considered as woodland. Stands of willow scrub may pose difficulties of definition.</p> <p>* Area and location of stands may be assessed remotely or by site visit.</p>

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		3.Regeneration potential	Successful establishment of young stems in gaps or on the edge of a stand	<ul style="list-style-type: none"> * Signs of seedlings growing through to saplings to young trees at sufficient density to maintain canopy density over a 10 yr period (or equivalent regrowth from coppice stumps). * No planting in stands. 	<ul style="list-style-type: none"> * A proportion of gaps at any one time may develop into permanent open space; equally some current permanent open space/glades may in time regenerate to closed canopy. * Regeneration may often occur on the edges of stands rather than in gaps within it. * In coppice most of the regeneration will be as stump regrowth. See JNCC Guidance Note on likely desirable levels of regeneration. * The minimum level of regeneration to be acceptable from a nature conservation viewpoint is likely to be much less than that needed where wood production is also an objective. * Assess this attribute by walking through the wood in spring/summer.
		4. Composition	<p>Cover of native versus non-native species (all layers)</p> <p>Death, destruction or replacement of native woodland species through effects of non-native fauna or external unnatural factors</p>	<ul style="list-style-type: none"> * At least the current level of site-native species maintained. * At least 90% of cover in any one layer of site-native or acceptable naturalised species. * Death, destruction or replacement of native woodland species through effects of introduced fauna or other external unnatural factors not more than 10% by number or area in a five year period. 	<ul style="list-style-type: none"> * In sites where there might be uncertainty as to what counts as site-native or as an acceptable naturalised species this must be made clear (eg the position of poplar). * Where cover in any one layer is less than 100% then the 90% target applies to the area actually covered by that layer. * Factors leading to the death or replacement of woodland species could include pollution, including eutrophication from adjacent farmland; new diseases (eg alder dieback). * Damage to species by non-native species that does not lead to their death or replacement by non woodland species (eg damage from squirrels to trees that non-the -less survive) is not necessarily unacceptable in nature conservation terms. * Excessive browsing/grazing by even native ungulates may be considered an unnatural external factor where it leads to undesirable shifts in the composition/structure of the stand, although this

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
					may be picked up by attributes 2 or 5 anyway. * Assess this attribute by a walk through the site.
		5. Species, habitats, structures characteristic of the site.	<p>Ground flora type</p> <p>Distinctive and desirable elements for a given site eg. locally uncommon species such as <i>Carex elata</i>; veteran trees or rich invertebrate assemblages.</p> <p>Patches of associated habitats and transitions eg to ash wood, open fen and open water</p>	<p>* 80% of ground flora cover referable to relevant NVC wet woodland community (W 2, 5 and 6)</p> <p>* Distinctive elements maintained at current levels and in current locations (where appropriate).</p> <p>* Patches and transitions maintained in extent and where appropriate location.</p>	<p>* Changes leading to these targets not being met may be acceptable where this is due to natural processes.</p> <p>* Distinctive elements and patches should be marked on maps for ease of checking in the field wherever possible.</p> <p>* If there are species groups/assemblages that cannot be assessed directly on a general site visit then surrogate features should be given where possible, eg dead wood concentrations for associated invertebrates.</p>

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Molinia meadows on calcareous, peaty or clayey-silt-laden soils (<i>Molinion caeruleae</i>)	NVC type M24 M25	Extent	Total area (ha), mapped in relation to a site-specific reference level to be determined, in period early June - end of August.	No reduction in area and any consequent fragmentation without prior consent	Recoverable reduction = unfavourable; non-recoverable reduction = partially destroyed. Temporary reductions related to natural variation in hydrological conditions should be noted as such where information allows.
Unimproved marshy grassland		Sward composition: positive indicator species	Record the frequency of positive indicator species from the list below to give an overall total of 2 frequent and 3 occasional. Record in period early June - end of August. <i>Anagallis tenella</i> , <i>Angelica sylvestris</i> , <i>Cirsium dissectum</i> , <i>Erica tetralix</i> , <i>Eupatorium cannabinum</i> , <i>Filipendula ulmaria</i> , <i>Galium uliginosum</i> / <i>Galium palustre</i> , Orchidaceae spp., <i>Potentilla erecta</i> , small blue-green <i>Carex</i> spp. (leaves less than 5mm wide) (<i>C. flacca</i> , <i>C. nigra</i> , <i>C. panicea</i>), <i>Sphagnum</i> spp., <i>Succisa pratensis</i> , <i>Valeriana dioica</i> , <i>Valeriana officinalis</i> , <i>Viola palustris</i> .	Overall total of at least two species/taxa frequent plus at least three species/taxa occasional throughout the sward.	Choice of species related to NVC types, restriction to unimproved grassland and wetness characteristics of habitat, all satisfactory when inside target. Among possible species that could be used, choice further restricted by ease of identification, visibility in recording period.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		Sward composition: frequency and cover of <i>Molinia caerulea</i>	Record the frequency and % cover of <i>Molinia caerulea</i> . Record in period early June - end of August.	At least frequent throughout the sward but no more than 80% cover	<i>Molinia</i> is a characteristic component of the community and should thus be at least frequent. However, increasing cover exceeding upper target is indicative of insufficient management by grazing or cutting.
		Sward composition: negative indicator species	Record the frequency and % cover of negative indicator species. Record in period early June- end of August. <i>Cirsium arvense, Cirsium vulgare, Rumex crispus, Rumex obtusifolius, Urtica dioica.</i>	No species more than occasional throughout the sward or singly or together more than 5% cover	Invasive species chosen to indicate problems of eutrophication and disturbance from various sources when outside target eg poaching, stock feeding.
		Sward composition: cover of <i>Juncus</i> spp	Record the % cover of <i>Juncus</i> species from groups A and B. Record in period early June - end of August. Group A: jointed rushes (<i>Juncus acutiflorus, J. articulatus, J. subnodulosus</i>) Group B: <i>Juncus conglomeratus, J. effusus and J. inflexus.</i>	All species combined no more than 80% cover, of which no more than 50% made up of spp. from Group B	<i>Juncus spp</i> can be characteristic components of the communities. However, increasing cover is indicative of insufficient management by grazing or cutting and/or waterlogging. Group B species may indicate problems of eutrophication from various sources when outside target eg stock feeding, fertiliser use.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		*Sward composition: negative indicator species.	Record the % cover of negative indicator species. Record in period early June - end of August. <i>Cirsium palustre</i> .	No more than 20% cover.	This species may be indicative of disturbance from various sources when outside target eg poaching, stock feeding.
		*Sward composition: negative indicator species.	Record the % cover of negative indicator species. Record in period early June - end of August. <i>Deschampsia cespitosa</i>	No more than 10% cover.	Increasing cover of <i>Deschampsia cespitosa</i> outside target may be indicative of insufficient management by grazing or cutting, overgrazing, disturbance by excessive poaching or altered hydrology eg reduced water movement in the soil profile during the year resulting in anaerobic conditions. Increasing cover may lead to reduced species richness in the community.
		*Sward composition: negative indicator species	Record the % cover or frequency of negative indicator species in period early June - end of August. All tree and scrub species excluding <i>Salix repens</i> and <i>Myrica gale</i> , considered together.	No more than 5% cover.	Invasive species outside target shows that habitat is not being managed sufficiently eg lack of or insufficient grazing/cutting If scrub/tree species in pastures are more than occasional throughout the sward but less than 5% cover, they are soon likely to become a problem if grazing levels are not sufficient or if scrub control is not being carried out.
		*Sward composition: % cover of <i>Phragmites australis</i>	Record the % cover of <i>Phragmites australis</i> in period early June-end of August.	No more than 10% cover.	Increasing cover of <i>Phragmites australis</i> outside target may be indicative of insufficient management by grazing or cutting. Lack of management may ultimately convert the community to tall-fen in some geographical areas.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		Sward composition: % cover of <i>Myrica gale</i> .	Record the % cover of <i>Myrica gale</i> in period early June - end of August.	No more than 10% cover	If <i>Myrica</i> cover outside target this shows that habitat is not being managed sufficiently eg lack of or insufficient grazing/cutting
		Sward composition: negative indicator species.	Record the frequency and % cover of negative indicator species. Record in period early June - end of August. <i>Senecio aquaticus</i>	No more than occasional throughout the sward or more than 5% cover	Outside target can discourage hay/grazing management because the species is toxic to livestock, and is palatable when dry.
		Sward structure: average height	Record sward height in period early June - end of August. (Upper target refers to pastures only.)	M24a Sward 5 cm or greater (excluding <i>Juncus</i> spp.) but no more than 25% over 60 cm	Sward height above upper target shows that habitat is not being managed sufficiently eg lack of or insufficient grazing or if below lower target, is being overgrazed.
				M24b, M24c Sward 2 cm or greater (excluding <i>Juncus</i> spp.) but no more than 25% over 15 cm	
		Sward structure: litter	Record cover of litter where in a more or less continuous layer, distributed either in patches or in one larger area. Record in period early June - end of August for pastures.	Total extent no more than 25% of the sward	Outside target indicates biomass removal is insufficient eg lack of or insufficient grazing or not cut for hay.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		Sward structure: bare ground	Record extent of bare ground distributed through the sward, visible without disturbing the vegetation. Record in period early June - end of August.	No more than 10%	Outside target indicates problems with stock management eg poaching, supplementary feeding.
22.12/44 Hard oligo-mesotrophic waters with benthic vegetation of <i>Chara</i> formations	Almost exclusively type '4' of the GB Standing Water Classification. Very rarely types '5' and '10'.	Extent of <i>Chara</i> beds.	Check extent of <i>Chara</i> beds in July on an annual basis.	Maintain type and extent of <i>Chara</i> vegetation which is optimal for the interest feature. No significant decrease from reference level. Reference level to be determined.	<i>Chara</i> community. <i>Chara</i> formations of various species. Endangered/Vulnerable/Rare species are <i>Chara intermedia</i> , <i>Chara baltica</i> , <i>Chara canescens</i> , <i>Chara rudis</i> and <i>Chara connivens</i> ; and nationally scarce species are <i>Chara aspersa</i> , <i>Chara contraria</i> , <i>Chara pedunculata</i> and <i>Chara curta</i> . All are potentially components of a supporting community of <i>Myriophyllum spicatum</i> , <i>Potamogeton</i> species, <i>Callitriche</i> species and <i>Nymphaea alba/Nuphar lutea</i> . Turf ponds often fringed by <i>Phragmites australis</i> , <i>Typha angustifolia</i> and <i>Schoenoplectus lacustris</i> . Baseline survey should be carried out to determine present extent of <i>Chara</i> beds. Check for deterioration, extent of epiphytic growth on <i>Chara</i> . "Holes" in <i>Chara</i> beds should be monitored. <i>Elodea canadensis</i> should be absent. As <i>Chara</i> species are a colonising aspect of seral progression supporting macrophyte community may have to be managed to prevent seral progression. Extent will be variable according to site and can be variable according to seasonal changes In many cases <i>Chara</i> will be dominant feature.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Standing water-turf ponds.		Extent of supporting community including emergent vegetation.	Check community of associated macrophytes including, rare species, on an annual basis. Rare species include <i>Najas marina</i> . Maintain Chara and other species diversity.	Stable not expanding or contracting supporting community over 5 year period within limits of $\pm 10\%$ annually.	
		Water quality	Absence of filamentous algae and unicellular algal blooms. Establish Total P range by quarterly measurements over 3 year period, thereafter annually July/August.	For <i>Chara</i> lake $30 \mu\text{g l}^{-1}$ total phosphorus or below. Eutrophic conditions above $30 \mu\text{g l}^{-1}$ total phosphorus should not be prevalent.	Filamentous algae should be absent. The range of marl lakes exhibit a continuum of trophic condition from oligotrophy to low eutrophy. So the trophic condition for each marl lake type should be maintained. If filamentous algae present. Check for diffuse or point sources of pollution. Check Total P levels in aquifer if aquifer fed, check also that site not used for black-headed gull roosting or breeding. The target level should be set for individual SAC's and an acceptable range established. Increases in Total P level suggest need to move from annual July/August check back to more intensive quarterly samples to verify whether change is real.
		Sediment	Check condition of sediment and measure overall cover of marl every 10 years.	Marl production desirable, although this may be low or absent in oligotrophic hard waters. Some peat slumping acceptable, provided this is not induced due to land drainage.	Check immediate catchment area for drainage or land use change which might induce high sediment loads to enter system.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		Hydrology	Check water level in July annually.	Maintenance of stable water level desirable, although seasonal fluctuations expected.	Water level change downwards acceptable only in dry years. If lake level lowering due to outside water demands such as aquifer abstraction then counter measures need to be instigated.
22.13 Natural eutrophic lakes with Magnopotamion or Hydrocharition type vegetation. Standing water Turf ponds and ditch systems	NVC types: A3 A9 A13 A4 Types '7', '8', '9' and '10' of the GB Standing Water Classification.	Extent of community.	Check extent of beds in July/August every 4 years.	Extensive beds of submerged macrophytes should be present. Maintain mixed community.	Submerged vegetation characterised by broad leaved <i>Potamogeton</i> species such as <i>Potamogeton perfoliatus</i> , <i>P lucens</i> , <i>P crispus</i> , <i>P natans</i> , <i>P x salicilifolius</i> , <i>P coloratus</i> , <i>P polygonifolius</i> , <i>P gramineus</i> , <i>P. alpinus</i> and <i>Hydrocharition</i> type vegetation. <i>Hydrocharis morsus-ranae</i> is a very rare associate with the <i>Magnopotamion</i> in the UK. Its community components are present, however, mainly <i>Spirodela polyrhiza</i> , <i>Lemna minor</i> , <i>Hippuris vulgaris</i> , <i>Utricularia vulgaris</i> and <i>Apium inundatum</i> . Community should be mixed and no one species should be present above 40% level of total amount of macrophyte presence.
		Extent of <i>Potamogeton</i> species <i>Magnopotamion</i> .	Check species presence in July/August every 4 years.	Maintain species presence of all <i>Magnopotamion</i> and fine leaved <i>Potamogetons</i> .	No one <i>Potamogeton</i> species should be present above 40% level of total amount or level of macrophyte presence (see Water Quality comment).
		Extent of nationally scarce or threatened species.	Establish population size and position of nationally scarce, rare or threatened species over a period of 3 years, on a quarterly basis; thereafter every two years in July/August.	Maintain presence of all nationally scarce, rare or threatened plant species.	Nationally scarce, rare or threatened species can vary in population size and extent due to temporal/seasonal changes in climate which affects physical variables such as water temperature.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		Water quality	Arrange for analysis of quarterly measurements of Total P for first three years; thereafter annually in July/August.	Maintain water quality particularly Total P levels. For southern systems 100 $\mu\text{g l}^{-1}$ or below down to 65 $\mu\text{g l}^{-1}$.	The variable targets for Total P reflects the geographical range of this trophic state. The target for Total P should be set for individual SAC's and an acceptable range established. Increases in Total P suggest a need to move from annual July/August check, back to more intensive quarterly samples to verify whether change is real. Also check for cover shifts of macrophytes and dominant presence of pollution tolerant species above 40% level such as <i>Potamogeton pectinatus</i> , <i>Myriophyllum spicatum</i> and/or <i>Ceratophyllum demersum</i> .
		Water quantity	Check lake levels during July/August.	Maintain hydrology of turf pond or ditch system.	Hydrology involves not only lake or ditch levels but flushing rates; prevent lowering or raising of lake or ditch level through modification of outfalls. With ditch systems aim for constant high water table throughout the year Water abstraction may represent a significant issue through the reduction of ground water and flushing flows into marginal ditch systems.
		Sediment	Check for excessive growths of individual macrophytes ie above 40%.	Maintain sediment quality and quantity.	Effects of increased macrophyte growth also relates to water quality; if this is at target levels, then enrichment of sediments is an issue if broad leaved <i>Potamogeton</i> species decline and fine leaved <i>Potamogeton pectinatus</i> increases above 40% level or <i>Myriophyllum spicatum</i> / <i>Ceratophyllum demersum</i> become dominant. Introduced fish and recreational use of site might through sediment disturbance move sites out of favourable condition. Check for increases in siltation from catchment use changes or changes in sewage treatment.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
River	Otter <i>Lutra lutra</i>	Water quality	EA scale	"Good", with no pollution incidents	Refer to Environment Agency for data
		Flow rate	Mean annual flow rate	No reduction attributable to increased abstraction.	Data from Environment Agency
		Site integrity	Total area	No reduction of fragmentation of area	
		Fish stocks	EA assessment	Fish stocks appropriate to the nutrient status of the river No significant decline in fish biomass or species diversity	Refer to Environment Agency for sample data
		Disturbance	Extent of public access to river	No significant change to river or bankside usage; no significant development	
		Bankside cover	Proportion of bank lined with trees, scrub or other thick cover	No overall permanent decrease	Some change acceptable as long as it is appropriately mitigated
		Presence of otters	Signs of otters	Signs of otters found at least once per year	Use data from national or county surveys
Fen	Fen orchid <i>Liparis loeselii</i>	Vegetation	Visual assessment	Requires deep moss carpet with relatively high water levels at or near surface through year.	Negative attribute: Lack of deep moss carpet; deep litter layer.
			Visual assessment	Requires lack of scrub - <10% and scattered	Negative attribute: presence of scrub shading plants
			Visual assessment	Associates: Bryophytes including <i>Campylium protensum</i> , <i>Calliergon giganteum</i> , <i>Scorpidium scopioides</i> , <i>Cinclidium stygium</i> , <i>Carex appropinquata</i> , <i>C. lassiocarpa</i> , <i>Schoenus nigricans</i> associated with S24e and f	
			Visual assessment	Natural succession: Terrestrialisation of fens through hydrosere succession.	

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		Sward height	Visual assessment	Varies and link to plant populations is unknown	
		Water	Visual assessment	Needs surface wetness in summer	Negative attribute: Conductivity over 500uS Abstraction impacts on water levels
		Management	Regime	Mowing on 2-4 year rotation and/or extensive grazing (1 cow/4 ha) during summer depending on fen's productivity.	Trampling at a low level helps to open up the sward

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Rivers fens	Desmoulin's whorl snail <i>Vertigo moulinsiana</i>	structure and composition of marginal vegetation	Length or area of stand of appropriate vegetation	The extent of suitable habitat should be maintained, compared to the extent on a baseline map, over appropriate lengths of river or area of fen or pool margin [length of river or area of fen or swamp, and number of sample stretches to be decided locally]. Suitable vegetation will be dense, unbroken stands of <i>Glyceria maxima</i> , <i>Carex riparia</i> , <i>C. acutiformis</i> , <i>C. paniculata</i> , <i>Cladium mariscus</i> and/or sparse <i>Phragmites</i> and <i>Phalaris arundinacea</i> .	It is expected that traditional and accepted river management will cause local deterioration of some stands but the aim is to ensure that habitat in appropriate condition is present at frequent intervals along a river corridor. The snail appears to be able to colonise new adjacent stands rapidly, and closely spaced, fragmented patches may provide acceptable conditions for this species. Habitat should be a suitable size and linked to rivers and waterways hydrologically and not separated by barriers such as mown paths.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Rivers fens		water table	1. depth below ground level; 2 & 3. vegetation indicators of drying out.	1. Water table must be close to the surface so that the ground remains squelchy all year, i.e. never drying out, so that, even in high summer, water will rise when the soil is trodden. Winter flooding is permissible. 2. Not more than 10% (occasional on the DAFOR scale) replacement of preferred dominant species by dense tall reed or by plants of drier conditions, e.g. <i>Urtica dioica</i> , <i>Epilobium hirsutum</i> , and low grasses invading the litter layer, within pre-selected stands (as selected for	<i>V. moulinsiana</i> requires highly humid conditions which are met by a high water table below the stands of vegetation in which it lives. Unfavourably wet conditions can result from prolonged flooding in summer or water penning being set too high. Current research (2000-01) will refine acceptable limits and measures for soil moisture. measuring extent). 3. Not more than 10% (occasional on the DAFOR scale) replacement of tall monocotyledons by plants preferring wetter conditions, e.g. <i>Rorippa nasturtium-aquaticum</i> , <i>Apium nodiflorum</i> and <i>Berula erecta</i> .
Rivers fens		vegetation height	height of bulk of the vegetation	Average height of the stands no less than 50 cm.	<i>V. moulinsiana</i> requires tall leaves on which it lives almost of the year. Heavy grazing and mowing may be detrimental if it removes most taller clumps.
Rivers fens		shading by shrubs and trees (e.g. willow, alder)	proportion of habitat	Less than 10% increase in area of shade, compared to extent on the baseline map.	

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
rivers fens		water quality	Biological class - Environment Agenc's General Quality Assessment scheme. Assess every 5 years River Ecosystem Class. Assess against Environment Agency monitoring results. Suspended solids	>='b' In addition, no drop in class from exiting situation. >= RE3 In addition, no drop in class from exiting situation.	Although the snail lives out of the water, water quality may influence vegetation structure and perhaps the microflora living on the leaf surfaces where the snail feeds, and chemical quality may directly affect the snail when it is submerged during floods. Future experience and research may indicate that these variables are inapplicable to <i>V. moulinsiana</i> . No values are given for suspended solids as this pollutant has no direct influence on the condition of the habitat for moulinsiana. No monitoring targets are set for hardness but assessments for projects must take account of the snail's need for water whose hardness must not fall below value expected for the catchment.
All habitats: Fen meadow, Swamp, Marginal and Inundation, Standing Water	Annex 1 species of European importance and waterfowl assemblage including migratory species of European and national importance.	Extent of habitat.	Area (ha), measured periodically (frequency to be determined).	No significant decrease from reference level.	For all habitats for all qualifying species. Methodology for assessing target to be determined. Reference level to be determined.
		Disturbance in roosting and feeding areas	Reduction or displacement of birds, measured periodically (frequency to be determined).	No significant displacement of birds attributable to human disturbance in relation to reference level.	All qualifying breeding and wintering annex 1 and migratory species. Methodology for assessing target to be determined. Reference level to be determined.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
All habitats: Fen meadow, Swamp, Marginal and Inundation, Standing Water	Annex 1 species of European importance.	Food Availability	Abundance of live mammals and birds, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of food species year round in relation to reference level.	Small-medium sized mammals (voles, mice, rabbits) and birds (pipits to ducks) are important prey in the breeding season for marsh harriers and during the winter for hen harriers. Methodology for assessing target to be determined. Reference level to be determined.
Fen meadow	Nationally important migratory species.	Proximity of roosting areas to feeding areas	Roosting areas close to feeding areas, measured periodically (frequency to be determined).	No significant reduction in proximity of roosting areas to feeding areas during the winter season.	Wigeon require daytime feeding areas and roosting areas within c50 metres of each other. Methodology for assessing target to be determined.
Swamp, Marginal and Inundation	Annex 1 species of European importance.	Landscape	Large, unbroken expanse of emergent vegetation (nesting, feeding, concealment), measured periodically (frequency to be determined).	No significant reduction in expanse of emergent vegetation year round.	Bittern and Marsh Harrier require continuous reed over >20ha. Methodology for assessing target to be determined.
Swamp, Marginal and Inundation	Annex 1 species of European importance.	Vegetation characteristics	Pure reed stand with vigorous growth over whole area (nesting, concealment), measured periodically (frequency to be determined).	No significant reduction in extent of vigorous growth over the pure reed stand, maintained through cutting regime.	Bittern and marsh harrier require at least 30% of the reedbed uncut and the remainder not more than 6 years old with no more than 20% cut in any year. Methodology for assessing target to be determined.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Swamp, Marginal and inundation	Annex 1 species of European importance.	Water depth	Shallow water within reeds plus frequent deep pools and channels (feeding), measured periodically (frequency to be determined).	Water depth and extent of shallows within reeds should not deviate significantly with no significant reduction in the presence of deep pools and channels year round.	<p>Bittern and marsh harrier require water throughout the reedbed of 10-30cm, and bittern also require pools 2-4m deep.</p> <p>Channels for bittern should be up to 2.5m deep, consisting of a deep central channel (>1.5m) and 1m deep/5m wide shallow margin on at least one side.</p> <p>Methodology for assessing target to be determined.</p>
Swamp, Marginal and Inundation	Annex 1 species of European importance.	Hydrology flow	Stable Water levels, measured periodically (frequency to be determined).	Water levels should not deviate significantly during the breeding season.	<p><10cm fluctuation is required during the breeding season for Marsh Harrier.</p> <p>Methodology for assessing target to be determined.</p>
Swamp, Marginal and Inundation Standing Water	Annex 1 species of European importance.	Food Availability	Presence and abundance of fish and amphibians, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of prey species year round, in relation to reference level.	<p>Eel, rudd, roach of 6-35cm and frogs/toads are important for Bittern.</p> <p>Methodology for assessing target to be determined. Reference level to be determined.</p>

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Standing Water	Annex 1 species of European importance and migratory species of European and national importance.	Food Availability	Presence and abundance of aquatic plants, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of food species during the winter season in relation to reference level.	<p><i>Potamogeton, Ceratophyllum, Zannichellia, Myriophyllum, Ranunculus and Chara spp.</i> for Bewick's and whooper swan.</p> <p><i>Glyceria fluitans, Agrostis stolonifera, Chara, Potamogeton and Ceratophyllum spp</i> for gadwall.</p> <p><i>Scirpus, Eleocharis, Carex, Potamogeton</i> and <i>Glyceria</i> for shoveler.</p> <p><i>Chara, Nitella</i> and <i>Potamogeton spp.</i> are important for pochard and tufted duck.</p> <p><i>Chara, Cladophora, Potamogeton, Ruppia, Ranunculus</i> and <i>Elodea</i> are important for Coot.</p> <p>Methodology for assessing target to be determined. Reference level to be determined.</p>
Standing Water	Nationally important migratory species.	Food Availability	Presence and abundance of seed bearing plants, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of food species during the winter season in relation to reference level.	<p><i>Polygonum, Eleocharis, Rumex</i> and <i>Ranunculus</i> are important for Teal.</p> <p>Methodology for assessing target to be determined. Reference level to be determined.</p>
Standing Water	Migratory species of European and national importance.	Food availability	Presence and abundance of aquatic invertebrates, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of prey species during the winter season in relation to reference level.	<p>Hydrobia, crustaceans, caddisflies, diptera and beetles are important for shoveler.</p> <p>Hydrobia, flies, caddisfly, beetles and bugs are important for teal.</p> <p>Methodology for assessing target to be determined. Reference level to be determined.</p>

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Standing Water	Nationally important migratory species.	Food availability	Presence and abundance benthic invertebrates, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of prey species during the winter season in relation to reference level.	Chironomid larvae are important for pochard. <i>Dreissena polymorpha</i> , chironomid larvae, <i>Gammarus</i> and <i>Hydrobia</i> are important for tufted duck. Methodology for assessing target to be determined. Reference level to be determined.
Standing Water	Nationally important migratory species.	Food availability	Presence and abundance of surface and benthic invertebrates, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of prey species during the winter season in relation to reference level.	<i>Mytilus</i> , <i>Dreissena polymorpha</i> and caddis-fly larvae are important for coot. Methodology for assessing target to be determined. Reference level to be determined.
Standing Water	Nationally important migratory species.	Food availability	Presence and abundance of fish, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of prey species during the winter season in relation to reference level.	Fish of 10-25 cm are important for cormorant. Fish of 3-21 cm are important for great crested grebe. Methodology for assessing target to be determined. Reference level to be determined.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Standing Water	Annex 1 species of European importance and migratory species of European and national importance.	Water depth	Areas of shallow medium and deep water (feeding), measured periodically (frequency to be determined).	Water depths should not deviate significantly during the winter season.	<p>Cormorant require a water depth of 2-10m.</p> <p>Great crested grebe require a water depth of 1-3m.</p> <p>Bewick's and whooper swan require a water depth of <1m.</p> <p>Gadwall require a water depth of <25cm. A kleptoparasitic relationship with Coot can allow Gadwall to potentially exploit deeper areas up to 2m in depth.</p> <p>Shoveler and teal require a water depth of <30cm.</p> <p>Coot require a water depth of 0.5-2m.</p> <p>Pochard and tufted duck require a water depth of 2-5m.</p> <p>Methodology for assessing target to be determined.</p>
Standing Water	Annex 1 species of European importance.	Water area	Large open areas of water(feeding), measured periodically (frequency to be determined).	No significant reduction in the area of open water for feeding year round.	<p>Bittern require one or more freshwater pools of >0.5ha not exceeding 20% of reedbed area overall.</p> <p>Methodology for assessing target to be determined.</p>

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Standing Water	Annex 1 species of European importance and migratory species of national importance.	Water area	Large open areas of water(feeding, roosting), measured periodically (frequency to be determined).	No significant reduction in the area of open water for feeding and roosting during the winter season.	<p>Cormorant require one or more fresh waters of >20ha.</p> <p>Bewick's and whooper swan require one or more fresh waters of >10ha.</p> <p>Pochard require one or more fresh waters of >6ha.</p> <p>Tufted duck require one or more freshwaters of >5ha.</p> <p>Coot require one or more freshwaters of >2ha.</p> <p>Great crested grebe require one or more freshwaters of >1ha.</p> <p>Methodology for assessing target to be determined.</p>
Standing Water	Annex 1 species of European importance.	Hydrology/ Flow	Fluctuating water levels, measured periodically (frequency to be determined).	Range of water level fluctuation providing a succession of surface water areas (feeding) during the winter season.	<p>Ideally Bewick's and whooper swan require water levels fluctating by 5-15% per month.</p> <p>Methodology for assessing target to be determined.</p>



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cSAC: The Broads
SPA: Broadland
Component SSSI: Broad Fen, Dilham

Conservation objectives for the European Interest on the SSSI

The conservation objectives for the European interest on the SSSI are:

to maintain*, in favourable condition, the:

- Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior*.
- Calcareous fens with *Cladium mariscus* and species of the *Carex davallianae*.
- Natural eutrophic lakes with *Magnopotamion* or *Hydrocharition*-type vegetation.
- Hard oligo-mesotrophic waters with benthic vegetation of *Chara* spp..

to maintain*, in favourable condition, the habitats for the population of:

- Fen orchid (*Liparis loeselii*).
- Desmoulin's whorl snail (*Vertigo moulinsiana*).
- Otter (*Lutra lutra*).

to maintain*, in favourable condition, the habitats for the populations of Annex1 bird species⁺ of European importance with particular reference to:

- open water
- swamp
- fen
- fen meadow with ditches and water bodies.

+Bittern, Marsh harrier, Hen harrier.

to maintain*, in favourable condition, the habitats for the populations of migratory bird species⁺ of European importance with particular reference to:

- Open water
- swamp
- fen
- fen meadow with ditches and water bodies.

+ Shoveler and Gadwall.

to maintain*, in favourable condition, the habitats of the populations of waterfowl that contribute to the wintering waterfowl assemblage of the European importance with particular reference to:

- open water
- swamp and fen and fen meadow with ditches and water bodies.

* maintenance implies restoration if the feature is not currently in favourable condition.

The Conservation Objectives for The Broads candidate Special Area of Conservation and Broadland Special Protection Area are, in accordance with para C 10 of PPG 9, the reasons for which the cSAC was designated and the SPA classified. The entry of 30 January 1996 on the Register of European Sites gives the reasons for which the SPA was classified.

The **Broads cSAC** and **Broadland SPA** includes land within: Alderfen Broad SSSI, Ant Broads and Marshes SSSI, Barnby Broad and Marshes SSSI, Broad Fen, Dilham SSSI, Bure Broads and Marshes SSSI, Burgh Common and Muckfleet Marshes SSSI, Calthorpe Broad SSSI, Cantley Marshes SSSI, Crostwick Marsh SSSI, Decoy Carr, Acle SSSI, Ducan's Marsh, Claxton SSSI, Geldeston Meadows SSSI, Hall Farm Fen, Hemsby SSSI, Halvergate Marshes SSSI, Hardley Flood SSSI, Limpenhoe Meadows SSSI, Ludham-Potter Heigham Marshes SSSI, Poplar Farm Meadows, Langley SSSI, Priory Meadows, Hickling SSSI, Shallam Dyke Marshes, Thurne SSSI, Smallburgh Fen SSSI, Sprat's Water and Marshes, Carlton Colville SSSI, Stanley and Alder Carrs, Aldeby SSSI, Upper Thurne Broads and Marshes SSSI, Upton Broads and Marshes SSSI and Yare Broads and Marshes SSSI.

The **Broads cSAC** additionally includes land within: Damgate Marshes, Acle SSSI and Trinity Broads SSSI.

Favourable Condition Table for Broad Fen, Dilham SSSI

The Favourable Condition Table will be used by English Nature and other relevant authorities to determine if a site is in favourable condition. Favourable condition is achieved when the targets given below are met.

The favourable condition table should inform the scope and nature of any 'appropriate assessment' under the Habitats Regulations, but an appropriate assessment will also require consideration of issues specific to the individual plan or project. The favourable condition table does not by itself provide a comprehensive basis on which to assess plans and projects as required under Regulations 20-21, 24, 48-50 and 54 - 85. The scope and content of an appropriate assessment will depend upon the location, size and significance of the proposed project. English Nature will advise on a case by case basis.

Following an appropriate assessment, competent authorities are required to ascertain the effect on the integrity of the site. The integrity of the site is defined in para C10 of PPG9 as the coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified. The determination of favourable condition is separate from the judgement of effect upon integrity. For example, there may be a time-lag between a plan or project being initiated and a consequent adverse effect upon integrity becoming manifest in the condition assessment. In such cases, a plan or project may have an adverse effect upon integrity even though the site remains in favourable condition.

Annual counts for qualifying bird species will be used by English Nature, in the context of five year peak means, together with available information on UK population and distribution trends, to assess whether the SPA is continuing to make an appropriate contribution to the Favourable Conservation Status of the species across Europe.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Calcareous fens with <i>Cladium mariscus</i> and species of the <i>Caricion davallianae</i> Floodplain/valley mire (E33)	NVC type S24	Extent	Area (ha), measured periodically.	Maintain type and extent of NVC communities which are optimal for the interest feature. No significant decrease from reference level.	Map extent and position of main NVC communities, monitor every 5 years. Reference level to be determined.
		Sward composition	Frequency of <i>Cladium mariscus</i>	Maintain extent and abundance of <i>Cladium mariscus</i> .	Monitor <i>Cladium</i> every 5 years. Reference level to be determined.
			Floristic quality of <i>Phragmites australis</i> - <i>Peucedanum palustre</i> fen (S24) through the abundance of 'typical' species	Within the area occupied by target communities, the eponymous species and others of constancy V should be frequent.	Monitor every five years.
			Floristic quality of small sedge component of the vegetation	Maintain extent and abundance of small sedge component.	Monitor small sedge component every 5 years. Reference level to be determined
			Frequency or cover of tree / scrub spp.	No more than 5% cover, if in discrete stands, or no more than occasional throughout the sward.	

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		Sward structure	Extent of bare mud or peat visible without disturbing vegetation	No more than 5% of mire area	
			Frequency of hoof prints	No more than occasional over the mire as a whole	
		Water quality	Base rich, low fertility supply to vegetation	Maintain groundwater and other base rich-low nutrient water sources to the vegetation	These communities can be adversely affected by nutrient enrichment. In floodplain situations river water quality is critically important.
				Establish target base and NPK concentration and monitor annually.	It is important that irrigating waters are free from excessive plant nutrients. Reference level to be determined
		Water quantity	Hydrological regime.	Maintain appropriate hydrological regime to support recognised vegetation types. Reference level to be determined	Better understanding of the functioning of sites is required, including the importance of groundwater and piezometric head Install dipwells in a network or transect and measure at least bimonthly.
Rare species.	Maintain or enhance populations of special or rare plant (and animal) species.	Species to be determined.	Identify special species and seek guidance in defining measures. Reference levels to be determined.		
Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i>, <i>Alnion incanae</i>, <i>Salicion alvae</i>)	Parts of NVC types W2 and W5 and 6)	Extent	Extent/location of stands	No loss of ancient semi-natural stands At least current area of recent semi-natural stands maintained, although their location may alter.	* Stand loss due to natural processes eg in minimum intervention stands may be acceptable. * A high proportion of this type of woodland may be recent and hence a dynamic interchange with open wet communities may occur. * Stand destruction may occur if the understorey and ground flora are irretrievably damaged even

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
				At least the area of ancient woodland retained	<p>if the canopy remains intact.</p> <ul style="list-style-type: none"> * Loss = 0.5 ha or 0.5% of the stand area, whichever is the smaller. * 20% canopy cover is conventionally taken as the lower limit for an area to be considered as woodland. Stands of willow scrub may pose difficulties of definition. * Area and location of stands may be assessed remotely or by site visit.
Semi-natural woodland		2. Natural processes and structural development	<p>Age/size class variation within and between stands; presence of open space and old trees; dead wood lying on the ground; standing dead trees</p> <p>Structures associated with the hydrological regime also need to</p>	<ul style="list-style-type: none"> * At least the current level of structural diversity maintained. * Understorey (2-5m) present over at least 20% of total stand area * Ground flora present over at least 50% of area excluding temporary pool areas * Canopy cover present over 30-90 % of stand area * Age class structure appropriate to the site, its history and management. * A minimum of 3 fallen lying trees or major branches per ha and 4 	<ul style="list-style-type: none"> * Any changes leading to exceedance of these limits due to natural processes are likely to be acceptable. * There is generally a good structural variety in these stands although veteran trees may be under-represented because of past treatment and the unstable nature of some sites. * The ground flora may appear sparse, particularly where periodic flooding leaves areas of bare mud etc. Its composition may be variable (see attribute 5). * In coppiced stands a lower canopy cover (of standards) can be accepted. * See JNCC guidance note for the sorts of age structure likely to be appropriate for different types of management regime. * Dead wood is often abundant but because

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
			be considered.	trees per ha allowed to die standing. * At least the current level of natural hydrological features should be maintained (channels, pools, periodic flooding)	there tend to be fewer big trees the size of the fallen wood is often small. Flooding may lead to local accumulations with other areas totally lacking fallen wood. * Assess this attribute by field survey. * Where possible the hydrological regime should be allowed to revert to a more natural state.
		3.Regeneration potential	Successful establishment of young stems in gaps or on the edge of a stand	* Signs of seedlings growing through to saplings to young trees at sufficient density to maintain canopy density over a 10 yr period (or equivalent regrowth from coppice stumps). * No planting in stands.	* A proportion of gaps at any one time may develop into permanent open space; equally some current permanent open space/glades may in time regenerate to closed canopy. * Regeneration may often occur on the edges of stands rather than in gaps within it. * In coppice most of the regeneration will be as stump regrowth. See JNCC Guidance Note on likely desirable levels of regeneration. * The minimum level of regeneration to be acceptable from a nature conservation viewpoint is likely to be much less than that needed where wood production is also an objective. * Assess this attribute by walking through the wood in spring/summer.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		4. Composition	Cover of native versus non-native species (all layers)	<ul style="list-style-type: none"> * At least the current level of site-native species maintained. * At least 90% of cover in any one layer of site-native or acceptable naturalised species. 	<ul style="list-style-type: none"> * In sites where there might be uncertainty as to what counts as site-native or as an acceptable naturalised species this must be made clear (eg the position of poplar). * Where cover in any one layer is less than 100% then the 90% target applies to the area actually covered by that layer. * Factors leading to the death or replacement of woodland species could include pollution, including eutrophication from adjacent farmland; new diseases (eg alder dieback). * Damage to species by non-native species that does not lead to their death or replacement by non woodland species (eg damage from squirrels to trees that non-the -less survive) is not necessarily unacceptable in nature conservation terms. * Excessive browsing/grazing by even native ungulates may be considered an unnatural external factor where it leads to undesirable shifts in the composition/structure of the stand, although this may be picked up by attributes 2 or 5 anyway. * Assess this attribute by a walk through the site.
		5. Species, habitats, structures characteristic of the site.	Ground flora type	* 80% of ground flora cover referable to relevant NVC wet woodland community (W 2, 5 and 6)	* Changes leading to these targets not being met may be acceptable where this is due to natural processes.
			Distinctive and desirable elements	* Distinctive elements maintained at current	* Distinctive elements and patches should be marked on maps for ease of checking in the

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
			for a given site eg. locally uncommon species such as <i>Carex elata</i> ; veteran trees or rich invertebrate assemblages. Patches of associated habitats and transitions eg to ash wood, open fen and open water	levels and in current locations (where appropriate). * Patches and transitions maintained in extent and where appropriate location.	field wherever possible. * If there are species groups/assemblages that cannot be assessed directly on a general site visit then surrogate features should be given where possible, eg dead wood concentrations for associated invertebrates.
22.12/44 Hard oligo-mesotrophic waters with benthic vegetation of <i>Chara</i> formations	Almost exclusively type '4' of the GB Standing Water Classification. Very rarely types '5' and '10'.	Extent of <i>Chara</i> beds.	Check extent of <i>Chara</i> beds in July on an annual basis.	Maintain type and extent of <i>Chara</i> vegetation which is optimal for the interest feature. No significant decrease from reference level. Reference level to be determined.	<i>Chara</i> community. <i>Chara</i> formations of various species. Endangered/Vulnerable/Rare species are <i>Chara intermedia</i> , <i>Chara baltica</i> , <i>Chara canescens</i> , <i>Chara rudis</i> and <i>Chara connivens</i> ; and nationally scarce species are <i>Chara aspersa</i> , <i>Chara contraria</i> , <i>Chara pedunculata</i> and <i>Chara curta</i> . All are potentially components of a supporting community of <i>Myriophyllum spicatum</i> , <i>Potamogeton</i> species, <i>Callitriche</i> species and <i>Nymphaea alba/Nuphar lutea</i> . Turf ponds often fringed by <i>Phragmites australis</i> , <i>Typha angustifolia</i> and <i>Schoenoplectus lacustris</i> . Baseline survey should be carried out to determine present extent of <i>Chara</i> beds. Check for deterioration, extent of epiphytic growth on <i>Chara</i> . "Holes" in <i>Chara</i> beds should be monitored. <i>Elodea canadensis</i> should be absent. As <i>Chara</i> species are a colonising aspect of seral progression supporting

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
					<p>macrophyte community may have to be managed to prevent seral progression.</p> <p>Extent will be variable according to site and can be variable according to seasonal changes In many cases <i>Chara</i> will be dominant feature.</p>
Turf ponds and ditch system.		Extent of supporting community including emergent vegetation.	<p>Check community of associated macrophytes including, rare species, on an annual basis.</p> <p>Rare species include <i>Najas marina</i>.</p> <p>Maintain <i>Chara</i> and other species diversity.</p>	Stable not expanding or contracting supporting community over 5 year period within limits of $\pm 10\%$ annually.	
		Water quality	<p>Absence of filamentous algae and unicellular algal blooms. Establish Total P range by quarterly measurements over 3 year period, thereafter annually July/August.</p>	<p>For <i>Chara</i> lake $30 \mu\text{g l}^{-1}$ total phosphorus or below. Eutrophic conditions above $30 \mu\text{g l}^{-1}$ total phosphorus should not be prevalent.</p>	<p>Filamentous algae should be absent. The range of marl lakes exhibit a continuum of trophic condition from oligotrophy to low eutrophy. So the trophic condition for each marl lake type should be maintained. If filamentous algae present. Check for diffuse or point sources of pollution. Check Total P levels in aquifer if aquifer fed, check also that site not used for black-headed gull roosting or breeding. The target level should be set for individual SAC's and an acceptable range established. Increases in Total P level suggest need to move from annual July/August check back to more intensive quarterly samples to verify whether change is real.</p>

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		Sediment	Check condition of sediment and measure overall cover of marl every 10 years.	Marl production desirable, although this may be low or absent in oligotrophic hard waters. Some peat slumping acceptable, provided this is not induced due to land drainage.	Check immediate catchment area for drainage or land use change which might induce high sediment loads to enter system.
		Hydrology	Check water level in July annually.	Maintenance of stable water level desirable, although seasonal fluctuations expected.	Water level change downwards acceptable only in dry years. If lake level lowering due to outside water demands such as aquifer abstraction then counter measures need to be instigated.
22.13 Natural eutrophic lakes with Magnopotamion or Hydrocharition type vegetation.	NVC types: A3 A9 A13 A4 Types '7', '8', '9' and '10' of the GB Standing Water Classification.	Extent of community.	Check extent of beds in July/August every 4 years.	Extensive beds of submerged macrophytes should be present. Maintain mixed community.	Submerged vegetation characterised by broad leaved <i>Potamogeton</i> species such as <i>Potamogeton perfoliatus</i> , <i>P lucens</i> , <i>P crispus</i> , <i>P natans</i> , <i>P x salicifolius</i> , <i>P coloratus</i> , <i>P polygonifolius</i> , <i>P gramineus</i> , <i>P. alpinus</i> and <i>Hydrocharition</i> type vegetation. <i>Hydrocharis morsus-ranae</i> is a very rare associate with the <i>Magnopotamion</i> in the UK. Its community components are present, however, mainly <i>Spirodela polyrhiza</i> , <i>Lemna minor</i> , <i>Hippuris vulgaris</i> , <i>Utricularia vulgaris</i> and <i>Apium inundatum</i> . Community should be mixed and no one species should be present above 40% level of total amount of macrophyte presence.
Standing water Canal, turf ponds and ditch system		Extent of <i>Potamogeton</i> species <i>Magnopotamion</i> .	Check species presence in July/August every 4 years.	Maintain species presence of all <i>Magnopotamion</i> and fine leaved <i>Potamogetons</i> .	No one <i>Potamogeton</i> species should be present above 40% level of total amount or level of macrophyte presence (see Water Quality comment).

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		Extent of nationally scarce or threatened species.	Establish population size and position of nationally scarce, rare or threatened species over a period of 3 years, on a quarterly basis; thereafter every two years in July/August.	Maintain presence of all nationally scarce, rare or threatened plant species.	Nationally scarce, rare or threatened species can vary in population size and extent due to temporal/seasonal changes in climate which affects physical variables such as water temperature.
		Water quality	Arrange for analysis of quarterly measurements of Total P for first three years; thereafter annually in July/August.	Maintain water quality particularly Total P levels. For southern systems 100 $\mu\text{g l}^{-1}$ or below down to 65 $\mu\text{g l}^{-1}$.	The variable targets for Total P reflects the geographical range of this trophic state. The target for Total P should be set for individual SAC's and an acceptable range established. Increases in Total P suggest a need to move from annual July/August check, back to more intensive quarterly samples to verify whether change is real. Also check for cover shifts of macrophytes and dominant presence of pollution tolerant species above 40% level such as <i>Potamogeton pectinatus</i> , <i>Myriophyllum spicatum</i> and/or <i>Ceratophyllum demersum</i> .
		Water quantity	Check lake levels during July/August.	Maintain hydrology of lake or ditch system.	Hydrology involves not only lake or ditch levels but flushing rates; prevent lowering or raising of lake or ditch level through modification of outfalls. With ditch systems aim for constant high water table throughout the year Water abstraction may represent a significant issue through the reduction of ground water and flushing flows into marginal ditch systems.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		Sediment	Check for excessive growths of individual macrophytes ie above 40%.	Maintain sediment quality and quantity.	Effects of increased macrophyte growth also relates to water quality; if this is at target levels, then enrichment of sediments is an issue if broad leaved <i>Potamogeton</i> species decline and fine leaved <i>Potamogeton pectinatus</i> increases above 40% level or <i>Myriophyllum spicatum</i> / <i>Ceratophyllum demersum</i> become dominant. Introduced fish and recreational use of site might through sediment disturbance move sites out of favourable condition. Check for increases in siltation from catchment use changes or changes in sewage treatment.
Fen	Fen orchid <i>Liparis loeselii</i>	Vegetation	Visual assessment	Requires deep moss carpet with relatively high water levels at or near surface through year.	Negative attribute: Lack of deep moss carpet; deep litter layer.
			Visual assessment	Requires lack of scrub - <10% and scattered	Negative attribute: presence of scrub shading plants
			Visual assessment	Associates: Bryophytes including <i>Campylium protensum</i> , <i>Calliargon giganteum</i> , <i>Scorpidium scopioides</i> , <i>Cinclidium stygium</i> , <i>Carex appropinquata</i> , <i>C.</i> , <i>lassiocarpa</i> , <i>Schoenus nigricans</i> associated with S24e and f	
			Visual assessment	Natural succession: Terrestrialisation of fens through hydroseral succession.	
		Sward height	Visual assessment	Varies and link to plant populations is unknown	
		Water	Visual assessment	Needs surface wetness in summer	Negative attribute: Conductivity over 500uS Abstraction impacts on water levels

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		Management	Regime	Mowing on 2-4 year rotation and/or extensive grazing (1 cow/4 ha) during summer depending on fen's productivity.	Trampling at a low level helps to open up the sward
River and fen	Otter <i>Lutra lutra</i>	Water quality	EA scale	"Good", with no pollution incidents	Refer to Environment Agency for data
		Flow rate	Mean annual flow rate	No reduction attributable to increased abstraction.	Data from Environment Agency
		Site integrity	Total area	No reduction of fragmentation of area	
		Fish stocks	EA assessment	Fish stocks appropriate to the nutrient status of the river No significant decline in fish biomass or species diversity	Refer to Environment Agency for sample data
		Disturbance	Extent of public access to river	No significant change to river or bankside usage; no significant development	
		Bankside cover	Proportion of bank lined with trees, scrub or other thick cover	No overall permanent decrease	Some change acceptable as long as it is appropriately mitigated
		Presence of otters	Signs of otters	Signs of otters found at least once per year	Use data from national or county surveys

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Rivers fens	Desmoulin's whorl snail <i>Vertigo moulinsiana</i>	structure and composition of marginal vegetation	Length or area of stand of appropriate vegetation	The extent of suitable habitat should be maintained, compared to the extent on a baseline map, over appropriate lengths of river or area of fen or pool margin [length of river or area of fen or swamp, and number of sample stretches to be decided locally]. Suitable vegetation will be dense, unbroken stands of <i>Glyceria maxima</i> , <i>Carex riparia</i> , <i>C. acutiformis</i> , <i>C. paniscus</i> <i>Cladium mariscus</i> and/or sparse <i>Phragmites</i> and <i>Phalaris arundinacea</i> .	It is expected that traditional and accepted river management will cause local deterioration of some stands but the aim is to ensure that habitat in appropriate condition is present at frequent intervals along a river corridor. The snail appears to be able to colonise new adjacent stands rapidly, and closely spaced, fragmented patches may provide acceptable conditions for this species. Habitat should be a suitable size and linked to rivers and waterways hydrologically and not separated by barriers such as mown paths.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Rivers fens		water table	1. depth below ground level; 2 & 3. vegetation indicators of drying out.	1. Water table must be close to the surface so that the ground remains squelchy all year, i.e. never drying out, so that, even in high summer, water will rise when the soil is trodden. Winter flooding is permissible. 2. Not more than 10% (occasional on the DAFOR scale) replacement of preferred dominant species by dense tall reed or by plants of drier conditions, e.g. <i>Urtica dioica</i> , <i>Epilobium hirsutum</i> , and low grasses invading the litter layer, within pre-selected stands (as selected for	<i>V. moulinsiana</i> requires highly humid conditions which are met by a high water table below the stands of vegetation in which it lives. Unfavourably wet conditions can result from prolonged flooding in summer or water penning being set too high. Current research (2000-01) will refine acceptable limits and measures for soil moisture. measuring extent). 3. Not more than 10% (occasional on the DAFOR scale) replacement of tall monocotyledons by plants preferring wetter conditions, e.g. <i>Rorippa nasturtium-aquaticum</i> , <i>Apium nodiflorum</i> and <i>Berula erecta</i> .
Rivers fens		vegetation height	height of bulk of the vegetation	Average height of the stands no less than 50 cm.	<i>V. moulinsiana</i> requires tall leaves on which it lives most of the year. Heavy grazing and mowing may be detrimental if it removes most taller clumps.
Rivers fens		shading by shrubs and trees (e.g. willow, alder)	proportion of habitat	Less than 10% increase in area of shade, compared to extent on the baseline map.	

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
rivers fens		water quality	Biological class - Environment Agenc's General Quality Assessment scheme. Assess every 5 years River Ecosystem Class. Assess against Environment Agency monitoring results. Suspended solides	>='b' In addition, no drop in class from exiting situation. >= RE3 In addition, no drop in class from exiting situation.	Although the snail lives out of the water, water quality may influence vegetation structure and perhaps the microflora living on the leaf surfaces where the snail feeds, and chemical quality may directly affect the snail when it is submerged during floods. Future experience and research may indicate that these variables are inapplicable to <i>V. moulinsiana</i> . No values are given for suspended solids as this pollutant has no direct influence on the condition of the habitat for moulinsiana. No monitoring targets are set for hardness but assessments for projects must take account of the snail's need for water whose hardness must not fall below value expected for the catchment.
All habitats: Swamp, Marginal and Inundation, Standing Water	Annex 1 species of European importance and waterfowl assemblage including migratory species of European and national importance.	Extent of habitat.	Area (ha), measured periodically (frequency to be determined).	No significant decrease from reference level.	For all habitats for all qualifying species. Methodology for assessing target to be determined. Reference level to be determined.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		Disturbance in roosting and feeding areas	Reduction or displacement of birds, measured periodically (frequency to be determined).	No significant displacement of birds attributable to human disturbance in relation to reference level.	All qualifying breeding and wintering annex 1 and migratory species. Methodology for assessing target to be determined. Reference level to be determined.
All habitats: Swamp, Marginal and Inundation, Standing Water	Annex 1 species of European importance.	Food Availability	Abundance of live mammals and birds, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of food species year round in relation to reference level.	Small-medium sized mammals (voles, mice, rabbits) and birds (pipits to ducks) are important prey in the breeding season for marsh harriers and during the winter for hen harriers. Methodology for assessing target to be determined. Reference level to be determined.
Swamp, Marginal and Inundation	Annex 1 species of European importance.	Landscape	Large, unbroken expanse of emergent vegetation (nesting, feeding, concealment), measured periodically (frequency to be determined).	No significant reduction in expanse of emergent vegetation year round.	Bittern and Marsh Harrier require continuous reed over >20ha. Methodology for assessing target to be determined.
Swamp, Marginal and inundation	Annex 1 species of European importance.	Water depth	Shallow water within reeds plus frequent deep pools and channels (feeding), measured periodically (frequency to be determined).	Water depth and extent of shallows within reeds should not deviate significantly with no significant reduction in the presence of deep pools and channels year round.	Bittern and marsh harrier require water throughout the reedbed of 10-30cm, and bittern also require pools 2-4m deep. Channels for bittern should be up to 2.5m deep, consisting of a deep central channel (>1.5m) and 1m deep/5m wide shallow margin on at least one side. Methodology for assessing target to be determined.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Swamp, Marginal and Inundation	Annex 1 species of European importance.	Hydrology flow	Stable Water levels, measured periodically (frequency to be determined).	Water levels should not deviate significantly during the breeding season.	<10cm fluctuation is required during the breeding season for Marsh Harrier. Methodology for assessing target to be determined.
Swamp, Marginal and Inundation Standing Water	Annex 1 species of European importance.	Food Availability	Presence and abundance of fish and amphibians, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of prey species year round, in relation to reference level.	Eel, rudd, roach of 6-35cm and frogs/toads are important for Bittern. Methodology for assessing target to be determined. Reference level to be determined.
Standing Water	Migratory species of European and national importance.	Food Availability	Presence and abundance of aquatic plants, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of food species during the winter season in relation to reference level.	<i>Glyceria fluitans</i> , <i>Agrostis stolonifera</i> , <i>Chara</i> , <i>Potamogeton</i> and <i>Ceratophyllum spp</i> for gadwall. <i>Scirpus</i> , <i>Eleocharis</i> , <i>Carex</i> , <i>Potamogeton</i> and <i>Glyceria</i> for shoveler. <i>Chara</i> , <i>Nitella</i> and <i>Potamogeton spp.</i> are important for pochard and tufted duck. <i>Chara</i> , <i>Cladophora</i> , <i>Potamogeton</i> , <i>Ruppia</i> , <i>Ranunculus</i> and <i>Elodea</i> are important for Coot. Methodology for assessing target to be determined. Reference level to be determined.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Standing Water	Nationally important migratory species.	Food Availability	Presence and abundance of seed bearing plants, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of food species during the winter season in relation to reference level.	<i>Polygonum, Eleocharis, Rumex</i> and <i>Ranunculus</i> are important for Teal. Methodology for assessing target to be determined. Reference level to be determined.
Standing Water	Migratory species of European and national importance.	Food availability	Presence and abundance of aquatic invertebrates, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of prey species during the winter season in relation to reference level.	Hydrobia, crustaceans, caddisflies, diptera and beetles are important for shoveler. Hydrobia, flies, caddisfly, beetles and bugs are important for teal. Methodology for assessing target to be determined. Reference level to be determined.
Standing Water	Nationally important migratory species.	Food availability	Presence and abundance benthic invertebrates, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of prey species during the winter season in relation to reference level.	Chironomid larvae are important for pochard. <i>Dreissena polymorpha</i> , chironomid larvae, <i>Gammarus</i> and <i>Hydrobia</i> are important for tufted duck. Methodology for assessing target to be determined. Reference level to be determined.
Standing Water	Nationally important migratory species.	Food availability	Presence and abundance of surface and benthic invertebrates, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of prey species during the winter season in relation to reference level.	<i>Mytilus</i> , <i>Dreissena polymorpha</i> and caddis-fly larvae are important for coot. Methodology for assessing target to be determined. Reference level to be determined.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Standing Water	Nationally important migratory species.	Food availability	Presence and abundance of fish, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of prey species during the winter season in relation to reference level.	<p>Fish of 10-25 cm are important for cormorant.</p> <p>Fish of 3-21 cm are important for great crested grebe.</p> <p>Methodology for assessing target to be determined. Reference level to be determined.</p>
Standing Water	Migratory species of European and national importance.	Water depth	Areas of shallow medium and deep water (feeding), measured periodically (frequency to be determined).	Water depths should not deviate significantly during the winter season.	<p>Cormorant require a water depth of 2-10m.</p> <p>Great crested grebe require a water depth of 1-3m.</p> <p>Gadwall require a water depth of <25cm. A kleptoparasitic relationship with Coot can allow Gadwall to potentially exploit deeper areas up to 2m in depth.</p> <p>Shoveler and teal require a water depth of <30cm.</p> <p>Coot require a water depth of 0.5-2m.</p> <p>Pochard and tufted duck require a water depth of 2-5m.</p> <p>Methodology for assessing target to be determined.</p>
Standing Water	Annex 1 species of European importance.	Water area	Large open areas of water(feeding), measured periodically (frequency to be determined).	No significant reduction in the area of open water for feeding year round.	<p>Bittern require one or more freshwater pools of >0.5ha not exceeding 20% of reedbed area overall.</p> <p>Methodology for assessing target to be determined.</p>

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Standing Water	Migratory species of national importance.	Water area	Large open areas of water (feeding, roosting), measured periodically (frequency to be determined).	No significant reduction in the area of open water for feeding and roosting during the winter season.	<p>Pochard require one or more fresh waters of >6ha.</p> <p>Tufted duck require one or more freshwaters of >5ha.</p> <p>Coot require one or more freshwaters of >2ha.</p> <p>Great crested grebe require one or more freshwaters of >1ha.</p> <p>Methodology for assessing target to be determined.</p>



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pSPA: Breckland
cSAC: Breckland
Component SSSI: Bridgham and Brettenham Heaths

Conservation objective for the European Interest on the SSSI

The conservation objectives for the European interests on the SSSI are :

to maintain*, in favourable condition, the

- European dry heaths

to maintain*, in favourable condition, the habitats for the populations of Annex 1 species⁺, of European importance, with particular reference to:

- heathland
- acid grassland
- chalk grassland and/or inland dune communities

+ Stone curlew, Woodlark, Nightjar

* maintenance implies restoration if the feature is not currently in favourable condition.

The Conservation Objectives for Breckland proposed Special Protection Area and Breckland candidate Special Area of Conservation are, in accordance with para C 10 of PPG 9, the reasons for which the pSPA was proposed and the SAC designated .

The Breckland cSAC and the Breckland pSPA include land within:

Barnhamcross Common SSSI	Gooderstone Warren SSSI
Berner's Heath, Icklingham SSSI	Grime's Graves SSSI
Bridgham and Brettenham Heaths SSSI	Lakenheath Warren SSSI
Cavenham - Icklingham Heaths SSSI	Stanford Training Area SSSI
Cranwich Camp SSSI	Thetford Golf Course and Marsh SSSI
Deadman's Grave, Icklingham SSSI	Thetford Heath SSSI
East Wretham Heath SSSI	Wangford Warren and Carr SSSI
Field Barn Heaths, Hilborough SSSI	Weather and Horn Heaths SSSI
Foxhole Heath, Eriswell SSSI	Weeting Heath SSSI

The Breckland cSAC also includes land within:

Maidencross Hill SSSI	RAF Lakenheath SSSI
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The Breckland pSPA also includes land within

Barnham Heath SSSI	Little Heath, Barnham SSSI
Beeches Pit, West Stow SSSI	Old Bodney Camp SSSI
Cranberry Rough, Hockham SSSI	Rex Graham Reserve SSSI
Eriswell Low Warren SSSI	Warren Hill SSSI
High Lodge, Mildenhall SSSI	West Stow Heath SSSI
How Hill Track SSSI	

The Favourable Condition Table will be used by English Nature and other relevant authorities to determine if a site is in favourable condition. Favourable condition is achieved when the targets given below are met.

The favourable condition table should inform the scope and nature of any 'appropriate assessment' under the Habitats Regulations, but an appropriate assessment will also require consideration of issues specific to the individual plan or project. The favourable condition table does not by itself provide a comprehensive basis on which to assess plans and projects as required under Regulations 20-21, 24, 48-50 and 54 - 85. The scope and content of an appropriate assessment will depend upon the location, size and significance of the proposed project. English Nature will advise on a case by case basis.

Following an appropriate assessment, competent authorities are required to ascertain the effect on the integrity of the site. The integrity of the site is defined in para C10 of PPG9 as the coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified. The determination of favourable condition is separate from the judgement of effect upon integrity. For example, there may be a time-lag between a plan or project being initiated and a consequent adverse effect upon integrity becoming manifest in the condition assessment. In such cases, a plan or project may have an adverse effect upon integrity even though the site remains in favourable condition.

Annual counts for qualifying bird species will be used by English Nature, in the context of five year peak means, together with available information on UK population and distribution trends, to assess whether the SPA is continuing to make an appropriate contribution to the Favourable Conservation Status of the species across Europe.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Dry heathland	H1	Extent	Total area (approx 4ha) as mapped by Smith/ESL (1998). Measure every two years if it is possible.[In specific cases look if there is a radical difference between cSAC and SSSI baseline, in which case discuss with specialist.]	Maintain existing area and extent	This community is confined to base-poor and oligotrophic sandy soils in the more continental lowlands of Eastern England. Large areas have been lost or fragmented agriculture and forestry in the past.
		Bare ground	'Natural' bare ground (mineral soil) in intimate mosaic within vegetation 'Recreation' heavily used paralleling paths	'Natural' between 10-25% 'Heavily disturbed' <1%	Bryophytes and lichens are more extensive and diverse among open covers of <i>Calluna</i> [Sandy profiles can be found in coastal and a few inland dune systems, where there is, has been, mobile sand.]
		Vegetation Structure	Record percentage of cover of <i>Calluna vulgaris</i> in different stages of its life cycle.	Cover of <i>Calluna vulgaris</i> to be between 25% minimum and 90% maximum. Mosaic with >10% young and 30-50% mature / degenerate <i>Calluna vulgaris</i> within unit. < 25% <i>Ulex europaeus</i>	<i>Calluna vulgaris</i> is often the only woody species present. Its cover and height are variable. Grasses, when they occur, are present as scattered tussocks. <i>Ulex europaeus</i> is uncommon and restricted to disturbed areas.
		Vegetation Composition	Record frequency of any of the following species when present: List A <i>Calluna vulgaris</i> List B <i>Agrostis capillaris</i> , <i>Festuca ovina</i> , <i>Deschampsia flexuosa</i>	All species from List A must be at least frequent. At least two species of list B are at least occasional	Associated flora is for the most part confined to areas between <i>Calluna</i> clumps and the centre of collapsing bushes.
		Negative indicators	Record frequency and percentage cover of any of the following species when present: <i>Pteridium aquilinum</i> <i>Rhododendron ponticum</i> <i>Rubus</i> spp. <i>Senecio</i> spp. <i>Urtica dioica</i> <i>Pinus</i> spp. <i>Betula</i> spp. <i>Quercus</i> spp. <i>Cirsium arvense</i> <i>Cirsium vulgare</i>	< 50 % cover degenerate/dead <i>Calluna vulgaris</i> No <i>Rhododendron ponticum</i> < 1 % <i>Rubus</i> spp., <i>Senecio</i> spp., <i>Urtica dioica</i> , <i>Cirsium</i> spp. < 5% trees, tree seedlings or other species of scrub. < 25% <i>Pteridium aquilinum</i>	<i>Rhododendron ponticum</i> and <i>Gaultheria shallon</i> can spread rapidly and have a negligible nature conservation value. Dense <i>Rhododendron</i> casts deep shade which excludes other vegetation. Scrub (shrubs, trees or tree seedlings) above 1 m in height is an important component of the heathland but its cover should be stable or not increasing as a whole. Management of bracken should be directed more to control than eradication.

			<i>Deschampsia flexuosa</i>	<25% <i>Deschampsia flexuosa</i>	
			Record presence of signs of overgrazing, e.g. carpet, topiary or drumstick heather forms	No presence of signs of overgrazing.	Although lowland heathlands tend to be more under-grazed than over-grazed, localized overgrazing may occur. Management may need to be modified to tackle these situations.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
All habitats; heathland, acid grassland, chalk grassland and/or inland dune communities	Annex 1 populations of European importance: stone-curlew, nightjar, woodlark	Extent and distribution of habitat	Area, measured periodically (frequency to be determined)	No significant decrease from reference level.	Methodology for assessing target to be determined. Reference level to be determined.
	Annex 1	Disturbance	Reduction or displacement of birds,	No significant reduction or displacement	Methodology for assessing target to be

	populations of European importance: stone-curlew, nightjar, woodlark		measured periodically (frequency to be determined)	of birds attributable to human disturbance in relation to reference level.	determined. Reference level to be determined.
	Annex 1 population of European importance: stone-curlew	Food availability -	Abundance of soil and dung invertebrates, measured periodically (frequency to be determined)	Presence and abundance of prey species should not deviate significantly from reference level	Including e.g. beetles, grasshoppers, flies, earthworms, snails, slugs. Methodology for assessing target to be determined. Reference level to be determined.
	Annex 1 population of European importance: nightjar	Food availability	Abundance of night-flying insects, measured periodically (frequency to be determined).	Presence and abundance of prey species should not deviate significantly from reference level.	Moths and beetles are important for nightjar. Methodology for assessing target to be determined. Reference level to be determined.
	Annex 1 population of European importance: woodlark	Food availability	Abundance of ground-surface invertebrates, measured periodically (frequency to be determined).	Presence and abundance of prey species should not deviate from reference level.	Including e.g. spiders, weevils, caterpillars. Methodology for assessing target to be determined. Reference level to be determined.
	Annex 1 population of European importance: stone-curlew	Vegetation characteristics	Extent and proportions of patches of at least half-hectare with vegetation less than 2cm high and at least 10% bare ground and unrestricted views over 200m, patches of medium height vegetation for roosting, measured periodically (frequency to be determined).	No significant decrease in extent and proportions of patches of at least half-hectare with vegetation less than 2cm high and at least 10% bare ground and unrestricted views over 200m, patches of medium height vegetation for roosting, measured periodically; from reference	Methodology for assessing target to be determined. Reference level to be determined.

				level.	
	Annex 1 population of European importance: nightjar	Vegetation characteristics	Extent and proportions of open ground with predominantly low vegetation (feeding), bare patches (nesting), and sparse woodland / scrub cover (feeding, roosting) measured periodically (frequency to be determined).	No significant decrease in extent and proportions of open ground with predominantly low vegetation (feeding), bare patches (nesting), and sparse woodland / scrub cover (feeding, roosting) from reference level.	Nightjar require vegetation mostly of 20-60cm with frequent bare patches greater than 2m ² , 10-20% bare ground (nesting) and less than 50% tree/scrub cover overall Reference level to be determined
	Annex 1 population of European importance: woodlark	Vegetation characteristics	Extent and proportions of mix of shrub / tree cover (display), short-medium vegetation and bare ground (feeding, roosting, nesting), measured periodically (frequency to be determined).	No significant decrease in extent and proportions of mix of shrub / tree cover (display), short-medium vegetation and bare ground (feeding, roosting, nesting).	Frequent bare patches under 0.5 ha within mosaic of short (under 5cm high) to medium (10-20cm high) ground vegetation, and small clumps of shrubs or trees. Methodology for assessing target to be determined. Reference level to be determined.

SLR/NS



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SPA: Breydon Water

Component SSSI: Breydon Water

Conservation objectives for the European Interest on the SSSI

The conservation objectives for the European interest on the SSSI are:

to maintain*, in favourable condition, the habitats for the populations of Annex 1 bird species⁺ of European importance with particular reference to:

- Intertidal mudflats and estuary
- salt marsh
- lowland wet grassland with ditches and water bodies.

+ Bewick's swan, Avocet, Golden plover, Common tern and Ruff.

to maintain*, in favourable condition, the habitats for the populations of migratory bird species⁺ of European importance with particular reference to:

- Intertidal mudflats and estuary
- salt marsh
- lowland wet grassland with ditches and water bodies.

+ Lapwing.

to maintain*, in favourable condition, the habitats of the populations of waterfowl that contribute to the wintering waterfowl assemblage of European importance, with particular reference to,

Intertidal mudflats and estuary
salt marsh
lowland wet grassland with ditches and water bodies.

* maintenance implies restoration if the feature is not currently in favourable condition.

The Conservation Objectives for Breydon Water Special Protection Area are, in accordance with para C 10 of PPG 9, the reasons for which the SPA was classified.

The entry of 25 August 1998 on the Register of European Sites gives those reasons for which the SPA was initially classified. The SPA has since been extended, the extended site was classified on 2 February 2000 but has not yet been registered.

The draft conservation objectives for the Breydon Water European marine site were published by English Nature on 20 December 2000.

The **Breydon Water SPA** includes land within: Halvergate Marshes SSSI and Breydon Water SSSI.

The Favourable Condition Table will be used by English Nature and other relevant authorities to determine if a site is in favourable condition. Favourable condition is achieved when the targets given below are met.

The favourable condition table should inform the scope and nature of any ‘appropriate assessment’ under the Habitats Regulations, but an appropriate assessment will also require consideration of issues specific to the individual plan or project. The favourable condition table does not by itself provide a comprehensive basis on which to assess plans and projects as required under Regulations 20-21, 24, 48-50 and 54 - 85. The scope and content of an appropriate assessment will depend upon the location, size and significance of the proposed project. English Nature will advise on a case by case basis.

Following an appropriate assessment, competent authorities are required to ascertain the effect on the integrity of the site. The integrity of the site is defined in para C10 of PPG9 as the coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified. The determination of favourable condition is separate from the judgement of effect upon integrity. For example, there may be a time-lag between a plan or project being initiated and a consequent adverse effect upon integrity becoming manifest in the condition assessment. In such cases, a plan or project may have an adverse effect upon integrity even though the site remains in favourable condition.

Annual counts for qualifying bird species will be used by English Nature, in the context of five year peak means, together with available information on UK population and distribution trends, to assess whether the SPA is continuing to make an appropriate contribution to the Favourable Conservation Status of the species across Europe.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
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Estuary, intertidal mud.	Annex1 species of European importance and migratory species of European and national importance.	Extent of habitat.	Area (ha), measured periodically (frequency to be determined)	No significant decrease from reference level.	For all habitats for all qualifying species. Methodology for assessing target to be determined. Reference level to be determined.
		Disturbance in roosting and feeding areas	Reduction or displacement of birds, measured periodically (frequency to be determined).	No significant displacement of birds attributable to human disturbance in relation to reference level.	Excessive disturbance can result in reduced food intake and/or increased energy expenditure. Methodology for assessing target to be determined. Reference level to be determined.
	Annex1 species of European importance and migratory species of European and national importance.	Landscape	Open terrain relatively free of obstructions (feeding, anti-predator, roosting), measured periodically (frequency to be determined).	No significant reduction in view-lines in feeding and roosting areas.	Bewick's Swan, white fronted goose, golden plover, lapwing and wigeon prefer unrestricted views over 500 metres. Black-tailed godwit and ruff prefer unrestricted views over 200 metres. Methodology for assessing target to be determined.
	Migratory species of national importance.	Proximity of roosting and feeding areas.	Roosting areas close to feeding areas, measured periodically (frequency to be determined).	No significant reduction in the proximity of roosting and feeding areas during the winter season.	Wigeon require daytime feeding areas and roosting areas within c50m of each other. Methodology for assessing target to be determined.
	Annex1 species of European importance and migratory species of European and national importance.	Hydrology/ Flow	Fluctuating water levels, measured periodically (frequency to be determined).	Range of water level fluctuation providing a succession of surface water areas (feeding).	Ideally water levels fluctuating by tidal cycle. Methodology for assessing target to be determined.
		Water depth	Shallow water (feeding), measured periodically (frequency to be	Aim to provide a range of water depths at different states of the tide.	Cormorant require a water depth of 2-10m. Bewick's swan require a water depth of <1m.

			determined).		Shoveler require a water depth of <25cm. Avocet require a water depth of 3-5cm. Ruff require a water depth of 1-3cm. Methodology for assessing target to be determined.
		Food availability	Abundance of surface and sub-surface invertebrates, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of prey species in relation to reference level, subject to natural change.	Marine invertebrates including molluscs, marine worms & crustaceans are important food. <i>Macoma, Cardium and Nereis</i> are important for Black-tailed godwit. <i>Arenicola</i> and <i>Nereis</i> are important for Avocet Flies, beetles and seeds are important for Ruff Reference level to be determined. Methodology for assessing target to be determined.
		Food availability	Abundance of aquatic invertebrates, insects and plant material, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of aquatic invertebrates, insects and plant material, in relation to reference level, subject to natural change.	<i>Hydrobia</i> and seeds are important for Shoveler. Reference level to be determined. Methodology for assessing target to be determined.
		Food availability	Abundance of eel grass and green algae, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of eel grass and green algae in relation to reference level, subject to natural change.	Eel grass and green algae are important for wigeon Reference level to be determined. Methodology for assessing target to be determined.
Saltmarsh and tern platforms	Annex 1 species	Extent and distribution of habitat	Area (ha) of habitat measured once during the reporting cycle, measured periodically (frequency to be determined).	No significant decrease in extent from reference level, subject to natural change.	The lumps and the tern platforms provide nesting habitat for common tern colony. Bare shingle/ground with up to 50% area vegetated in patches no more than 100cm x 30m and <30cm above water level. Reference level to be determined. Methodology for assessing target to be determined.
	Migratory species of	Food availability	Abundance of soft leaved grasses and	No significant reduction in presence and abundance of soft	<i>Agrostis stolonifera, Puccinellia maritima</i> and <i>Salicornia</i> spp. are important for wigeon.

	national importance		herbs, measured periodically (frequency to be determined).	leaved grasses and herbs in relation to reference level, subject to natural change.	Reference level to be determined. Methodology for assessing target to be determined
Open water	Annex 1 species of European importance and migratory species of national importance	Open water	Large open areas of water (feeding, roosting) measured periodically (frequency to be determined).	No significant reduction in the area of open water for feeding and roosting during the winter season.	Cormorant require one or more water bodies of >20ha. Bewick's swan require one or more water bodies of >10ha for roosting. Methodology for assessing target to be determined.
	Annex 1 species of European importance and migratory species of national importance	Food availability	Abundance of fish, measured periodically (frequency to be determined)	No significant reduction in presence and abundance of prey species in relation to reference level, subject to natural change.	Fish, particularly sand ell and spratt of 5-8cm are important food for common tern. Cormorant feed on fish of 10-25cm. Reference level to be determined. Methodology for assessing target to be determined.



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Breckland Forest SSSI.

(part of Breckland potential Special Protection Area)

Conservation objective for the European interests of the SSSI

The conservation objective for the European interest on the SSSI is:

To maintain*, in favourable condition, the habitats for the internationally important populations of Woodlark (*Lullula arborra*) and Nightjar (*Caprimulgus europaeus*).

*** maintenance implies restoration if the feature is not currently in favourable condition.**

The Conservation Objectives for Breckland pSPA are, in accordance with para C 10 of PPG 9, the reasons for which the pSPA was classified. The entry of date on the Register of European Sites gives the reasons for which the SPA was classified.

Annex:

Favourable Condition Table.

FAVOURABLE CONDITION TABLE

The Favourable Condition Table will be used by English Nature and other relevant authorities to determine if a site is in favourable condition. Favourable condition is achieved when the targets set out below are met.

The favourable condition table should inform the scope and nature of any ‘appropriate assessment’ under the Habitats Regulations, but an appropriate assessment will also require consideration of issues specific to the individual plan or project. The favourable condition table does not by itself provide a comprehensive basis on which to assess plans and projects as required under Regulations 20-21, 24, 48-50 and 54 to 85. The scope and content of an appropriate assessment will depend upon the location, size and significance of the proposed project. English Nature will advise on a case by case basis.

Following appropriate assessment, competent authorities are required to ascertain the effect on the integrity of the site. The integrity of the site is defined in para C10 of PPG9 as the coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified.

Annual counts for qualifying bird species will be used by English Nature, in the context of five year peak means, together with available information on UK population and distribution trends, to assess whether the SPA is continuing to make an appropriate contribution to the Favourable Conservation Status of the species across Europe.

Operational feature	Criteria feature	Attribute	Measure	Target	Comments
Coniferous woodland	Annex 1 populations of European Importance: Woodlark	Extent of habitat	Area of young plantation or other open areas	No decrease in overall extent of habitat with a mosaic of vegetation types including plantation of 0-6 age class, or other open areas, from a reference level. No decrease in size of individual clear fell areas within the plantation (no more than 10% of the annual coupe area to be in blocks < 5 hectares).	The overall area of suitable habitat with the correct vegetation characteristics (for nesting/display/feeding/roosting) should be maintained, although the distribution will vary as areas of plantation mature or are felled. Older stands can support woodlark, however, they provide less favourable habitat and support lower densities than stands of 0-6 years. Reference level to be determined
	Annex 1 populations of European Importance: Nightjar	Extent of habitat	Area of young plantation or other open areas.	No decrease in overall extent of habitat with a mosaic of vegetation types including plantation less than 5 years old (ideal habitat) and 5-15 years old (suitable habitat), or	The overall area of suitable habitat with the correct vegetation characteristics (for nesting/display/feeding/roosting) should be maintained, although the distribution will vary as areas of plantation mature or are felled.

				other open areas, from a reference level.	Reference level to be determined
Heathland	Annex 1 populations of European Importance: nightjar woodlark	Extent of habitat	Area, measured periodically (frequency to be determined)	No significant decrease from reference level	Methodology for assessing target to be determined. Reference level to be determined
All habitats; Coniferous woodland, heathland	Annex 1 populations of European Importance: Woodlark	Vegetation characteristics	Extent of mix of tree/shrub cover (display), short-medium vegetation and bare ground (feeding, nesting and roosting)	No significant decrease from reference level	Frequent bare patches of <0.5ha within mosaic of short (<5cm) to medium (10-20cm) ground vegetation, and small clumps of shrubs or trees. Plantations usually provide suitable habitat for 6 years after they were planted. Methodology for assessing target to be established. Reference level to be established.
	Annex 1 populations of European Importance: Nightjar	Vegetation characteristics	Extent of open ground with predominantly low vegetation (feeding) and bare patches (nesting). Sparse woodland/scrub cover (feeding, roosting),	No significant decrease from reference level.	Vegetation mostly of 20-60cm with frequent bare patches of >2sq.m, 10-20% bare ground and <50% tree/scrub cover overall (>50% free from canopy), (nesting). Plantations provide the best habitat <5yrs after planting. There is a decline in numbers supported as the age of stands increases from to 10-15yrs. Older stands only support nightjars where smaller areas within stands remain clear. Nightjar forage several kms from nest sites, a matrix of habitats including coniferous woodland, scrub, wet woodland and areas of continuous cover are important for feeding Methodology for assessing target to be determined. Reference level to be determined.
All habitats; Coniferous woodland, heathland	Annex 1 populations of European Importance: Woodlark	Food availability	Abundance of ground surface invertebrates	No significant decrease from reference level	Spiders, weevils and caterpillars are important for woodlark. Methodology for assessing target to be determined. Reference level to be determined.
	Annex 1 populations of European Importance: Nightjar	Food availability	Abundance of night-flying insects	No significant decrease from reference level	Moths and beetles are important for nightjar. Methodology for assessing target to be established. Reference level to be established.
	Annex 1 populations of European Importance: Nightjar, Woodlark	Disturbance	Reduction or displacement of birds	No significant displacement of birds attributable to human disturbance, in relation to the reference level	Methodology for assessing target to be established. Reference level to be established



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cSAC: Norfolk Valley Fens

Component SSSI: Buxton Heath

Conservation objective for the European Interest on the SSSI

The conservation objectives for the European interests on the SSSI are:

to maintain* in favourable condition the:

- Alkaline fens
- European dry heaths
- Northern Atlantic wet heaths with *Erica tetralix*
- *Molinia* meadows on chalk, peat, clay or silt-laden soils (*Molinion caeruleae*)

* maintenance implies restoration if the feature is not currently in favourable condition.

The Conservation Objectives for Norfolk Valley Fens candidate Special Area of Conservation are, in accordance with para C10 of PPG 9, the reasons for which the cSAC was designated. The cSAC also includes land within Badley Moor, Dereham SSSI, Booton Common SSSI, Coston Fen, Runhall SSSI, East Walton and Adcock's Common SSSI, Flordon Common SSSI, Foulden Common SSSI, Great Cressingham Fen SSSI, Holt Lowes SSSI, Potter and Scarning Fens SSSI, Sheringham and Beeston Regis Common SSSI, Southrepps Common SSSI, Swangey Fen, Attleborough SSSI and Thompson Water, Carr and Common SSSI.

Favourable Condition Table for Buxton Heath SSSI

The favourable condition table will be used by English Nature to determine favourable condition and other relevant authorities to determine if a site is in favourable condition. Favourable condition is achieved when when the targets set out below are met.

The favourable condition table should inform the scope and nature of any 'appropriate assessment' under the Habitats Regulations, but an appropriate assessment will also require consideration of issues specific to the individual plan or project. The favourable condition table does not by itself provide a comprehensive basis on which to assess plans or projects as required under Regulations 20-21, 24, 48-50 and 54-85. The scope and content of an appropriate assessment will depend upon the location, size and significance of the proposed project. English Nature will advise on a case by case basis.

Following an appropriate assessment, competent authorities are required to ascertain the effect on the integrity of the site. The integrity of the site is defined in para. C10 of PPG9 as 'the coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified. The determination of favourable condition is separate from the judgement of effect upon integrity. For example, there may be a time lag between a plan or project being initiated and a consequent adverse effect upon integrity being manifest in the condition assessment. In such cases, a plan or project may have an adverse effect upon integrity even though the site remains in favourable condition.

Operational feature	Criteria feature	Attributes	Measures	Targets	Comments
Spring and seepage-fed chalk-rich alkaline valley fen	M13 black bog rush - blunt flowered rush <i>Schoenus nigricans</i> - <i>Juncus subnodulosus</i> fen.	Extent	Extent identified by NVC survey (Norfolk Wildlife Trust 2000) Extent identified for restoration to chalk-rich fen from other semi-natural habitats, in the Buxton Heath Management Plan 2000-2004.	Maintain as an absolute minimum baseline the overall area and extent identified by the Norfolk Wildlife Trust NVC survey 2000. Extend the chalk-rich fen into areas currently occupied by secondary woodland or scrub, which have been identified for restoration to fen in the Buxton Heath Management Plan 2000-2004.	Extent of fen communities may be subject to some natural dynamic variation, in response to extensive grazing pressure.
		Water Quantity and Quality	High piezometric head and permanently high water table (allowing for seasonal fluctuations). Spring water has low fertility and is rich in base ions.	Summer water levels (July - September) to fall no more than 10cm below ground surface.	
		Vegetation Structure	Presence of varied sward structure with full range of vegetation heights from close-cropped to tall and ungrazed. Includes varying degrees of tussock height. Always includes elements of short pioneer fen vegetation.	At height of summer (July-August) fen vegetation to be typically no more than 0.5 metres tall, with random mosaic of differing vegetation and tussock heights across whole fen area.	Again, this is likely to be influenced by the grazing regime, with vegetation responding to variable grazing pressure over time
		Vegetation Composition	Brown moss carpets List A: <i>Schoenus nigricans</i> <i>Juncus subnodulosus</i> List B: <i>Pinguicula vulgaris</i> <i>Parnassia palustris</i> <i>Anagallis tenella</i> Orchid species	Low growing brown moss carpets to occupy between 5-10% of overall fen area Both species in list A to be at least frequent All species in list B to be at least occasional.	
Operational feature	Criteria feature	Attributes	Measures	Targets	Comments
		Negative Indicators	<i>Phragmites australis</i> <i>Urtica dioica</i> <i>Salix cinerea</i> <i>Epilobium hirsutum</i> <i>Eupatorium cannabinum</i> <i>Calluna vulgaris</i>	clumps of <i>Salix cinerea</i> to occupy no more than 5% of the overall fen area. All other species listed to be no more than rare in the overall fen area.	Presence above limits of <i>Calluna</i> may indicate acidification. Others indicate neglect or eutrophication.

			<i>Fillipendula ulmaria</i>		
Dry heathland	H1 ling heather - sheep's fescue (<i>Calluna vulgaris</i> - <i>Festuca ovina</i>) heath H8 ling heather - western gorse (<i>Calluna vulgaris</i> - <i>Ulex gallii</i>) heath	Extent	Extent identified by NVC survey (Norfolk Wildlife Trust 2000) Extent identified for restoration to dry heather heath from other semi-natural habitats in Buxton Heath Management Plan 2000-2004 and Buxton Heath Site Management Statement.	Maintain as absolute minimum baseline extent identified by Norfolk Wildlife Trust NVC survey 2000. Extend into areas currently occupied by scrub and secondary woodland, but identified for restoration to dry heather heath, in Buxton Heath Management Plan 2000-2004 and Buxton Heath Site Management Statement.	The H1 community is confined to acidic sandy soils in the more continental lowlands of Eastern England. H8 occurs on free-draining, acid to circumneutral soils in the warm oceanic regions of lowland England.
		Bare ground	'Natural' bare ground (exposed mineral soil) in random, intimate mosaic within heath vegetation. 'Artificial' - caused by excessive or inappropriate human use ie eroded gulleys and pathways	no less than 5% and no more than 10% of the open heath <1% of overall heath area.	Bryophytes and lichens are more extensive and diverse among open covers of <i>Calluna</i> .
		Vegetation Structure	Distribution, % cover and proportions of <i>Calluna vulgaris</i> in different stages of its life cycle.	<i>Calluna vulgaris</i> to be the most characteristic and dominant species throughout both H1 and H8. The <i>Calluna</i> dominated mosaic comprises young pioneer or growth phase heather (25-35%), mature phase heather (25-35%) and older degenerate heather (25-35%)	In H1, <i>Calluna vulgaris</i> is often the only woody species present. Both communities support small localised patches of acid grasses.
Operational feature	Criteria feature	Attributes	Measures	Targets	Comments
		Vegetation Composition	Presence and frequency of the following species: List A: <i>Calluna vulgaris</i> <i>Ulex gallii</i> <i>Erica cinerea</i> List B: <i>Agrostis capillaris</i> <i>Festuca ovina</i> <i>Deschampsia flexuosa</i> <i>Potentilla erecta</i>	<i>Calluna vulgaris</i> is at least frequent within H1. All three species from List A are at least frequent within H8 At least two species of List B are at least occasional. <i>Potentilla erecta</i> is occasional in H8	Associated flora is for the most part confined to areas between <i>Calluna</i> clumps and the center of collapsing bushes. In H8, <i>Ulex gallii</i> forms an intricate mosaic with <i>Calluna vulgaris</i> .
		Negative indicators	Frequency and percentage cover of any of the following species when present:	< 1 % of open heath to be occupied by <i>Rubus</i> spp., <i>Senecio</i> spp., <i>Urtica</i>	Invasion of shrubs and trees is arrested by

			<p><i>Pteridium aquilinum</i> <i>Rubus</i> spp. <i>Senecio</i> spp. <i>Urtica dioica</i> <i>Pinus</i> spp. <i>Betula</i> spp. <i>Quercus</i> spp. <i>Cirsium arvense</i> <i>Cirsium vulgare</i></p>	<p><i>dioica</i>, <i>Cirsium</i> spp.</p> <p>Secondary scrub to occupy no more than 10% of the open dry heath, as scattered <i>Betula</i>, <i>Quercus</i> and <i>Pinus</i> trees and small clumps. <i>Quercus</i> and <i>Pinus</i> spp. to comprise no more than 20% of the proportion of secondary scrub.</p> <p><i>Pteridium aquilinum</i> to occupy no more than 5% of the overall open dry heath, and to be almost entirely confined to in or around secondary scrub areas.</p>	<p>extensive grazing and cutting.</p> <p>Invasion by <i>Pteridium</i> is arrested by extensive grazing and chemical treatment.</p>
			Evidence of overgrazing not compatible with the specified vegetation structure ie excessive close-cropped carpets, topiary or drumstick heather forms.	No evidence of overgrazing.	Although lowland heathlands tend to be more under-grazed than over-grazed, localized overgrazing may occur. Management may need to be modified to tackle these situations.
Operational feature	Criteria feature	Attributes	Measures	Targets	Comments
Wet heathland	M16 cross-leaved heath - <i>Sphagnum Erica tetralix</i> - <i>Sphagnum compactum</i> wet heath	Extent	<p>Extent identified by NVC survey (Norfolk Wildlife Trust 2000)</p> <p>Extent identified for restoration to wet heath from other semi-natural habitats in Buxton Heath Management Plan 2000-2004 and Buxton Heath Site Management Statement.</p>	<p>Maintain as absolute minimum baseline extent identified by Norfolk Wildlife Trust NVC survey 2000.</p> <p>Extend into areas currently occupied by scrub and secondary woodland, but identified for restoration to wet heath, in Buxton Heath Management Plan 2000-2004 and Buxton Heath Site Management Statement.</p>	M16 is characteristic of the drier south and east.
		Bare ground	<p>Natural bare ground (exposed mineral soil or peat) in random, intimate mosaic within wet heath vegetation</p> <p>Inappropriate or excessive human use ie eroded pathways or gulleys.</p>	<p>no less than 3% and no more than 5% of the open wet heath</p> <p><1% of overall wet heath area.</p>	M16 is characteristic of acid, oligotrophic peats.
		Vegetation Structure	Distribution and % cover of <i>Erica tetralix</i> and <i>Calluna vulgaris</i> in the different stages of their life cycle.	<i>Erica tetralix</i> is abundant and the dominant ericaceous species. Overall, <i>Calluna vulgaris</i> comprises	M16 presents a variable mixture of <i>Erica tetralix</i> , <i>Calluna</i>

			<p>% cover and proportion of wet heath sward that is supports <i>Molinia</i> tussocks</p> <p>% cover and distribution of pioneer phase wet heath, with ephemeral pools, low growing moss carpets, young <i>Erica tetralix</i>, <i>Drosera</i> spp. and <i>Eriophorum</i> spp.</p>	<p>no more than 20% of ericaceous component in the sward. All growth phases present .</p> <p>Scattered tussocks of <i>Molinia caerulea</i> no more than 20% of wet heath area.</p> <p>Pioneer phase wet heath to occupy no less than 10% and no more than 25% of overall wet heath area. Low growing moss carpets and young <i>Erica tetralix</i>, <i>Drosera</i> and <i>Eriophorum</i> spp. are always present.</p>	<p><i>vulgaris</i>, and <i>Molinia caerulea</i> in open, low stands, with a ground cover of bryophytes and lichens.</p> <p>Extensive grazing, and the seasonally wet water table may transform the appearance of stands and produce greater structural diversity.</p>
Operational feature	Criteria feature	Attributes	Measures	Targets	Comments
		Vegetation Composition	<p>Frequency of any of the following species when present:</p> <p>List A <i>Erica tetralix</i>, <i>Calluna vulgaris</i></p> <p>List B <i>Eriophorum</i> spp., <i>Rhynchospora alba</i>, <i>Carex panicea</i>, <i>Drosera</i> spp., <i>Succisa pratensis</i>, <i>Eleocharis multicaulis</i>, <i>Ulex gallii</i>, <i>Calluna</i>, <i>vulgaris</i>, <i>Erica cinerea</i>, <i>Ulex gallii</i>, <i>Potentilla erecta</i>.</p>	<p><i>Erica tetralix</i> is abundant. <i>Calluna vulgaris</i> is frequent.</p> <p><i>Drosera</i> spp, <i>Eriophorum</i> spp. and <i>Erica cinerea</i> are at least occasional.</p>	<p><i>E. cinerea</i> and <i>U. gallii</i> appear in transitions to drier heaths in the south-west and East Anglia.</p> <p><i>Calluna</i> presents a weak growth in wetter areas.</p>
		Vegetation Composition: rare species	<p>Presence of: <i>Gentiana pneumonanthe</i>, <i>Lycopodiella inundata</i>.</p>	Both species are present.	Rare species appear among bushes of <i>E. tetralix</i> and low <i>Calluna</i> . Most of them are site specific and therefore presence of any rare species should be noted on a site by site basis.
		Negative indicators	Record percentage cover of any of the following species when present:	< 5% cover trees, tree seedlings or other species of scrub.	Light grazing or occasional burning may

			<i>Salix cinerea</i> <i>Betula pubescens</i> <i>Pinus</i> spp. <i>Alnus glutinosa</i>		<p>help maintain the vegetation by setting back any invasion of woody plants.</p> <p>Uncontrolled burning or grazing, on the other hand, impoverishes vegetation.</p>
Operational feature	Criteria feature	Attributes	Measures	Targets	Comments
Purple moor grass mire	M24 purple moor grass - meadow thistle <i>Molinia caerulea</i> - <i>Cirsium dissectum</i> fen meadow	Extent	<p>Extent identified by NVC survey (Norfolk Wildlife Trust 2000)</p> <p>Extent identified for restoration to fen meadow from other semi-natural habitats in Buxton Heath Management Plan 2000-2004.</p>	<p>Maintain as absolute minimum baseline extent identified by Norfolk Wildlife Trust NVC survey 2000.</p> <p>Extend into areas currently occupied by scrub and secondary woodland, but identified for restoration to fen meadow, in Buxton Heath Management Plan 2000-2004.</p>	Extent of fen communities may be subject to some natural dynamic variation, in response to extensive grazing pressure.
		Sward composition: positive indicator species	<p>The frequency of positive indicator species from the list below to give an overall total of 2 frequent and 3 occasional.</p> <p><i>Anagallis tenella, Angelica sylvestris, Cirsium dissectum, Erica tetralix, Eupatorium cannabinum, Filipendula ulmaria, Galium uliginosum/ Galium palustre, Lotus pedunculatus, Orchidaceae spp., Pedicularis sylvatica, Potentilla erecta, sedges (C. flacca, C.nigra, C.panicea), Sphagnum spp., Succisa pratensis, Valeriana dioica, Viola palustris.</i></p>	<p>Overall total of at least two species/taxa frequent plus at least three species/taxa are occasional throughout the sward.</p> <p><i>Eupatorium cannabinum, Angelica sylvestris</i> and <i>Filipendula ulmaria</i> should be no more than occasional.</p>	Choice of species related to NVC types, restriction to unimproved grassland and wetness characteristics of habitat, all satisfactory when inside target. Among possible species that could be used, choice further restricted by ease of identification, visibility in recording period.
		Sward composition: frequency and cover of <i>Molinia caerulea</i>	Record the frequency and % cover of <i>Molinia caerulea</i> . Record in period early June - end of August.	At least frequent throughout the sward but no more than 80% cover	<i>Molinia</i> is characteristic of the community and should be at least frequent. However, increasing cover exceeding upper target is indicative of insufficient

Operational feature	Criteria feature	Attributes	Measures	Targets	Comments
		*Sward composition: cover of <i>Juncus</i> spp	Record the % cover of <i>Juncus</i> species from groups A and B. Record in period early June - end of August. Group A: jointed rushes (<i>Juncus acutiflorus</i> , <i>J. articulatus</i> , <i>J. subnodulosus</i>) Group B: <i>Juncus conglomeratus</i> , <i>J. effusus</i> and <i>J. inflexus</i> .	All species combined no more than 80% cover, of which no more than 50% made up of spp. from Group B	management by grazing or cutting. <i>Juncus</i> spp can be characteristic components of the communities. However, increasing cover is indicative of insufficient management by grazing or cutting and/or waterlogging. Group B species may indicate problems of eutrophication when outside target .
		*Sward composition: negative indicator species.	Record the % cover of negative indicator species. Record in period early June - end of August. <i>Cirsium palustre</i> . <i>Deschampsia cespitosa</i> <i>Phragmites australis</i> <i>Salix cinerea</i> <i>Cirsium vulgare</i>	<i>Salix</i> scrub to occupy no more than 5% of overall mire area Others to occupy no more than more than 5% cover.	Invasive species outside targets shows that habitat is not being managed sufficiently eg lack of or insufficient grazing/cutting
		Sward structure: average height	Sward height in period early June - end of August. (Upper target refers to pastures only.)	M24a Sward 5 cm or greater (excluding <i>Juncus</i> spp.) but no more than 25% over 60 cm	Sward height above upper target shows that habitat is not being managed sufficiently eg lack of or insufficient grazing or if below lower target, is being overgrazed.
				M24b, M24c Sward 2 cm or greater (excluding <i>Juncus</i> spp.) but no more than 25% over 15 cm	
		Sward structure: litter	Cover of litter where in a more or less continuous layer, distributed either in patches or in one larger area. Record in	Total extent no more than 20% of the sward	Outside target indicates biomass removal is insufficient eg lack of

Operational feature	Criteria feature	Attributes	Measures	Targets	Comments
			period early June - end of August for pastures.		or insufficient grazing or not cut for hay.
		Sward structure: bare ground	Extent of bare ground distributed through the sward, visible without disturbing the vegetation. Record in period early June - end of August.	No more than 5%	Outside target indicates problems with stock management eg poaching, supplementary feeding.



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pSPA: Breckland
Component SSSI: Eriswell Low Warren

Conservation objective for the European Interest on the SSSI

The conservation objectives for the European interests on the SSSI are :

to maintain*, in favourable condition, the habitats for the populations of the Annex 1 species⁺, of European importance, with particular reference to

- heathland
- acid grassland
- chalk grassland and/or inland dune communities

⁺ Stone curlew, woodlark

* maintenance implies restoration if the feature is not currently in favourable condition.

The Conservation Objectives for Breckland proposed Special Protection Area are, in accordance with para C 10 of PPG 9, the reasons for which the SPA was classified.

The Breckland pSPA includes land within:

Barnhamcross Common SSSI	High Lodge, Mildenhall SSSI
Barnham Heath SSSI	How Hill Track SSSI
Beeches Pit, West Stow SSSI	Lakenheath Warren SSSI
Berner's Heath, Icklingham SSSI	Little Heath, BarnhamSSSI
Bridgham and Brettenham Heaths SSSI	Old Bodney Camp SSSI
Cavenham - Icklingham Heaths SSSI	Rex Graham Reserve SSSI
Cranwich Camp SSSI	Stanford Training Area SSSI
Cranberry Rough, Hockham SSSI	Thetford Golf Course and Marsh SSSI
Deadman's Grave, Icklingham SSSI	Thetford Heath SSSI
East Wretham Heath SSSI	Wangford Warren and Carr SSSI
Eriswell Low Warren SSSI	Warren Hill SSSI
Field Barn Heaths, Hilborough SSSI	Weather and Horn Heaths SSSI
Foxhole Heath, Eriswell SSSI	Weeting Heath SSSI
Gooderstone Warren SSSI	West Stow Heath SSSI
Grime's Graves SSSI	

The Favourable Condition Table will be used by English Nature and other relevant authorities to determine if a site is in favourable condition. Favourable condition is achieved when the targets given below are met.

The favourable condition table should inform the scope and nature of any 'appropriate assessment' under the Habitats Regulations, but an appropriate assessment will also require consideration of issues specific to the individual plan or project. The favourable condition table does not by itself provide a comprehensive basis on which to assess plans and projects as required under Regulations 20-21, 24, 48-50 and 54 - 85. The scope and content of an appropriate assessment will depend upon the location, size and significance of the proposed project. English Nature will advise on a case by case basis.

Following an appropriate assessment, competent authorities are required to ascertain the effect on the integrity of the site. The integrity of the site is defined in para C10 of PPG9 as the coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified. The determination of favourable condition is separate from the judgement of effect upon integrity. For example, there may be a time-lag between a plan or project being initiated and a consequent adverse effect upon integrity becoming manifest in the condition assessment. In such cases, a plan or project may have an adverse effect upon integrity even though the site remains in favourable condition.

Annual counts for qualifying bird species will be used by English Nature, in the context of five year peak means, together with available information on UK population and distribution trends, to assess whether the SPA is continuing to make an appropriate contribution to the Favourable Conservation Status of the species across Europe.

Operational feature	Criteria feature	Attribute	Measure	Target	Comment
All habitats; heathland, acid grassland, chalk grassland and/or inland dune communities	Annex 1 populations of European importance: stone-curlew, woodlark	Extent and distribution of habitat	Area, measured periodically (frequency to be determined)	No significant decrease from reference level.	Methodology for assessing target to be determined. Reference level to be determined.
	Annex 1 populations of European importance: stone-curlew, woodlark	Disturbance	Reduction or displacement of birds, measured periodically (frequency to be determined)	No significant reduction or displacement of birds attributable to human disturbance in relation to reference level.	Methodology for assessing target to be determined. Reference level to be determined.
	Annex 1 population of European importance: stone-curlew	Food availability -	Abundance of soil and dung invertebrates, measured periodically (frequency to be determined)	Presence and abundance of prey species should not deviate significantly from reference level	Including e.g. beetles, grasshoppers, flies, earthworms, snails, slugs. Methodology for assessing target to be determined. Reference level to be determined.
	Annex 1 population of European importance: woodlark	Food availability	Abundance of ground-surface invertebrates, measured periodically (frequency to be determined).	Presence and abundance of prey species should not deviate from reference level.	Including e.g. spiders, weevils, caterpillars. Methodology for assessing target to be determined. Reference level to be determined.
	Annex 1 population of European importance: stone-curlew	Vegetation characteristics	Extent and proportions of patches of at least half-hectare with vegetation less than 2cm high and at least 10% bare ground and unrestricted views over 200m, patches of medium height vegetation for roosting, measured periodically (frequency to be determined).	No significant decrease in extent and proportions of patches of at least half-hectare with vegetation less than 2cm high and at least 10% bare ground and unrestricted views over 200m, patches of medium height vegetation for roosting, measured periodically; from	Methodology for assessing target to be determined. Reference level to be determined.

				reference level.	
	Annex 1 population of European importance: woodlark	Vegetation characteristics	Extent and proportions of mix of shrub / tree cover (display), short-medium vegetation and bare ground (feeding, roosting, nesting), measured periodically (frequency to be determined).	No significant decrease in extent and proportions of mix of shrub / tree cover (display), short-medium vegetation and bare ground (feeding, roosting, nesting).	Frequent bare patches under 0.5 ha within mosaic of short (under 5cm high) to medium (10-20cm high) ground vegetation, and small clumps of shrubs or trees. Methodology for assessing target to be determined. Reference level to be determined.

SLR/NS



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cSAC: The Broads
SPA: Broadland
Component SSSI: Ducan's Marsh, Claxton

Conservation objectives for the European Interest on the SSSI

The conservation objectives for the European interest on the SSSI are:

to maintain*, in favourable condition, the:

- Alkaline fens
- Hard oligo-mesotrophic waters with benthic vegetation of *Chara* spp..
- *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*).

to maintain*, in favourable condition, the habitats for the population of:

- Otter (*Lutra lutra*).

to maintain*, in favourable condition, the habitats for the populations of Annex1 bird species⁺ of European importance with particular reference to:

- swamp and fen
- fen meadow with ditches and water bodies.

+Marsh harrier, Hen harrier.

to maintain*, in favourable condition, the habitats for the populations of migratory bird species⁺ of European importance with particular reference to:

- swamp and fen
- fen meadow with ditches and water bodies.

+ Shoveler.

to maintain*, in favourable condition, the habitats of the populations of waterfowl that contribute to the wintering waterfowl assemblage of European importance with particular reference to:

- fen and fen meadow with ditches and water bodies.

* maintenance implies restoration if the feature is not currently in favourable condition.

The Conservation Objectives for The Broads candidate Special Area of Conservation and Broadland Special Protection Area are, in accordance with para C 10 of PPG 9, the reasons for which the cSAC was designated and the SPA classified. The entry of 30 January 1996 on the Register of European Sites gives the reasons for which the SPA was classified.

The **Broads cSAC** and **Broadland SPA** includes land within: Alderfen Broad SSSI, Ant Broads and Marshes SSSI, Barnby Broad and Marshes SSSI, Broad Fen, Dilham SSSI, Bure Broads and Marshes SSSI, Burgh Common and Muckfleet Marshes SSSI, Calthorpe Broad SSSI, Cantley Marshes SSSI, Crostwick Marsh SSSI, Decoy Carr, Acle SSSI, Ducan's Marsh, Claxton SSSI, Geldeston Meadows SSSI, Hall Farm Fen, Hemsby SSSI, Halvergate Marshes SSSI, Hardley Flood SSSI, Limpenhoe Meadows SSSI, Ludham-Potter Heigham Marshes SSSI, Poplar Farm Meadows, Langley SSSI, Priory Meadows, Hickling SSSI, Shallam Dyke Marshes, Thurne SSSI, Smallburgh Fen SSSI, Spratt's Water and Marshes, Carlton Colville SSSI, Stanley and Alder Carrs, Aldeby SSSI, Upper Thurne Broads and Marshes SSSI, Upton Broads and Marshes SSSI and Yare Broads and Marshes SSSI.

The **Broads cSAC** additionally includes land within: Damgate Marshes, Acle SSSI and Trinity Broads SSSI.

Favourable Condition Table for Duncans Marsh SSSI

The Favourable Condition Table will be used by English Nature and other relevant authorities to determine if a site is in favourable condition. Favourable condition is achieved when the targets given below are met.

The favourable condition table should inform the scope and nature of any ‘appropriate assessment’ under the Habitats Regulations, but an appropriate assessment will also require consideration of issues specific to the individual plan or project. The favourable condition table does not by itself provide a comprehensive basis on which to assess plans and projects as required under Regulations 20-21, 24, 48-50 and 54 - 85. The scope and content of an appropriate assessment will depend upon the location, size and significance of the proposed project. English Nature will advise on a case by case basis.

Following an appropriate assessment, competent authorities are required to ascertain the effect on the integrity of the site. The integrity of the site is defined in para C10 of PPG9 as the coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified. The determination of favourable condition is separate from the judgement of effect upon integrity. For example, there may be a time-lag between a plan or project being initiated and a consequent adverse effect upon integrity becoming manifest in the condition assessment. In such cases, a plan or project may have an adverse effect upon integrity even though the site remains in favourable condition.

Annual counts for qualifying bird species will be used by English Nature, in the context of five year peak means, together with available information on UK population and distribution trends, to assess whether the SPA is continuing to make an appropriate contribution to the Favourable Conservation Status of the species across Europe.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Alkaline fens.	M13 black bog rush - blunt flowered rush <i>Schoenus nigricans</i> - <i>Juncus subnodulosus</i> fen.	Extent	Area (ha), measured periodically.	Maintain type and extent of NVC communities which are optimal for the interest feature. No significant decrease from reference level.	Map extent and position of main NVC communities, monitor every 5 years. Reference level to be determined.
Spring and seepage-fed chalk-rich alkaline valley fen		Water quantity and quality	High piezometric head and permanently high water table (allowing for natural seasonal fluctuations) The spring water has low fertility and is very rich in base ions.	Summer water levels at fen surface throughout the year. No reduction in the extent of influence of seepage or spring head. No standing water. Maintain surface drainage to prevent buildup of surface waters.	Reduction in piezometric head could affect both water table and extent of the vegetation. Standing water is considered a negative indicator. Set up dipwells and record at least monthly during the summer.
		Water quality	Base rich, low fertility supply to vegetation	Maintain groundwater and other base rich-low nutrient water sources to the vegetation. No increase in surface and river waters inputs into M13 vegetation.	These communities can be adversely affected by nutrient enrichment. Surface and river water quality are critically important.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
				Establish target base and NPK concentration and monitor annually.	It is important that irrigating waters are free from excessive plant nutrients. Carry out water analysis for basic ions and for NPK every 5 years. Reference level to be determined
		Vegetation structure	Presence of varied sward structure with full range of vegetation heights, from close cropped to tall. Includes varying degrees of tussock height. Always includes elements of short pioneer fen vegetation	At height of summer (July August), fen vegetation to be typically no more than 0.5 metres tall, with random mosaic of differing vegetation and tussock heights across whole fen area.	If vegetation is managed by mowing, damage to tussock structure must be avoided.
		Vegetation composition	Floristic quality of <i>Schoenus nigricans</i> - <i>Juncus subnodulosus</i> mire (M13) through the abundance of 'typical' species	Within the area occupied by target communities, the eponymous species and others of constancy V or IV should be abundant.	Monitor every five years.
			Number of characteristic M13 species	More than x characteristic M13 species	Wheeler and Shaw 2000 refer to the number of characteristic M13 species equating to vegetation quality.
			Combined cover of <i>Carex</i> spp., <i>Eriophorum</i> spp., <i>Juncus subnodulosus</i> , <i>Schoenus nigricans</i> , brown / pleurocarpus mosses and positive indicators listed below	At least 75%	

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
			<p>Frequency of brown / pleurocarpus mosses (DAFOR scale)</p> <p>Frequency of positive indicators (DAFOR scale): <i>Anagallis tenella</i>, <i>Caltha palustris</i>, <i>Centaurea nigra</i>, <i>Dactylorhiza</i> spp., <i>Epipactis palustris</i>, <i>Filipendula ulmaria</i>, <i>Galium uliginosum</i>, <i>Hydrocotyle vulgaris</i>, <i>Lotus uliginosus</i>, <i>Lychnis flos-cuculi</i>, <i>Lythrum salicaria</i>, <i>Mentha aquatica</i>, <i>Parnassia palustris</i>, <i>Pedicularis</i> spp., <i>Pinguicula vulgaris</i>, <i>Succisa pratensis</i>, <i>Valeriana dioica</i>, <i>Vicia cracca</i></p>	<p>At least frequent throughout the flush</p> <p>At least three species frequent and three species occasional throughout.</p> <p>No species forming dominant stands over more than 20% of the flush</p>	
			<p>Frequency of negative indicators using DAFOR scale: <i>Deschampsia cespitosa</i>, <i>Holcus lanatus</i>, <i>Juncus acutiflorus</i>, <i>J. effusus</i></p>	No more than two species frequent throughout the sward, no species abundant	
			<p>Frequency of negative indicators using DAFOR scale: <i>Cirsium arvense</i>, <i>Cirsium vulgare</i>, <i>Urtica dioica</i></p>	No more than rare	

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
			Frequency or cover of tree / scrub spp.	No more than 5% cover or more than occasional throughout the sward	
		Sward structure	Extent of bare mud / peat visible without disturbing vegetation	No more than 15%	Exclude stones, gravel and tufa
			Frequency of <i>Molinia caerulea</i> tussocks	No more than occasional	
			Cover of litter in a more or less continuous layer	Total extent no more than 10% of the mire area	Litter may be distributed in patches or in one larger area
			Average vegetation height	In range 15 - 50cm	
			Frequency of hoof prints	No more than occasional over the mire as a whole	
		Rare species	Maintain or enhance populations of special or rare plant (and animal) species	Species to be determined.	Identify special species and seek guidance in defining measures. Reference levels to be determined.
Molinia meadows on calcareous, peaty or clayey-silt-laden soils (<i>Molinia caeruleae</i>)	NVC type M24	Extent	Total area (ha), mapped in relation to a site-specific reference level to be determined, in period early June - end of August.	No reduction in area and any consequent fragmentation without prior consent	Recoverable reduction = unfavourable; non-recoverable reduction = partially destroyed. Temporary reductions related to natural variation in hydrological conditions should be noted as such where information allows.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Unimproved marshy grassland		Sward composition: positive indicator species	Record the frequency of positive indicator species from the list below to give an overall total of 2 frequent and 3 occasional. Record in period early June - end of August. <i>Anagallis tenella, Angelica sylvestris, Cirsium dissectum, Erica tetralix, Eupatorium cannabinum, Filipendula ulmaria, Galium uliginosum/ Galium palustre, Orchidaceae spp., Pedicularis sylvatica, Potentilla erecta, small blue-green Carex spp. (leaves less than 5mm wide) (C. flacca, C.nigra, C.panicea), Sphagnum spp., Succisa pratensis, Valeriana dioica, Valeriana officinalis , Viola palustris.</i>	Overall total of at least two species/taxa frequent plus at least three species/taxa occasional throughout the sward.	Choice of species related to NVC types, restriction to unimproved grassland and wetness characteristics of habitat, all satisfactory when inside target. Among possible species that could be used, choice further restricted by ease of identification, visibility in recording period.
		Sward composition: frequency and cover of <i>Molinia caerulea</i>	Record the frequency and % cover of <i>Molinia caerulea</i> . Record in period early June - end of August.	At least frequent throughout the sward but no more than 80% cover	<i>Molinia</i> is a characteristic component of the community and should thus be at least frequent. However, increasing cover exceeding upper target is indicative of insufficient management by grazing or cutting.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		Sward composition: negative indicator species	Record the frequency and % cover of negative indicator species. Record in period early June- end of August. <i>Cirsium arvense, Cirsium vulgare, Rumex crispus, Rumex obtusifolius, Urtica dioica.</i>	No species more than occasional throughout the sward or singly or together more than 5% cover	Invasive species chosen to indicate problems of eutrophication and disturbance from various sources when outside target eg poaching, stock feeding.
		Sward composition: cover of <i>Juncus</i> spp	Record the % cover of <i>Juncus</i> species from groups A and B. Record in period early June - end of August. Group A: jointed rushes (<i>Juncus acutiflorus, J. articulatus, J. subnodulosus</i>) Group B: <i>Juncus conglomeratus, J. effusus and J. inflexus.</i>	All species combined no more than 80% cover, of which no more than 50% made up of spp. from Group B	<i>Juncus spp</i> can be characteristic components of the communities. However, increasing cover is indicative of insufficient management by grazing or cutting and/or waterlogging. Group B species may indicate problems of eutrophication from various sources when outside target eg stock feeding, fertiliser use.
		*Sward composition: negative indicator species.	Record the % cover of negative indicator species. Record in period early June - end of August. <i>Cirsium palustre.</i>	No more than 20% cover.	This species may be indicative of disturbance from various sources when outside target eg poaching, stock feeding.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		*Sward composition: negative indicator species.	Record the % cover of negative indicator species. Record in period early June - end of August. <i>Deschampsia cespitosa</i>	No more than 10% cover.	Increasing cover of <i>Deschampsia cespitosa</i> outside target may be indicative of insufficient management by grazing or cutting, overgrazing, disturbance by excessive poaching or altered hydrology eg reduced water movement in the soil profile during the year resulting in anaerobic conditions. Increasing cover may lead to reduced species richness in the community.
		*Sward composition: negative indicator species	Record the % cover or frequency of negative indicator species in period early June - end of August. All tree and scrub species excluding <i>Salix repens</i> and <i>Myrica gale</i> , considered together. NB If scrub/tree species in pastures are more than occasional throughout the sward but less than 5% cover, they are soon likely to become a problem if grazing levels are not sufficient or if scrub control is not being carried out.	No more than 5% cover.	Invasive species outside target shows that habitat is not being managed sufficiently eg lack of or insufficient grazing/cutting
		*Sward composition: % cover of <i>Phragmites australis</i>	Record the % cover of <i>Phragmites australis</i> in period early June-end of August.	No more than 10% cover.	Increasing cover of <i>Phragmites australis</i> outside target may be indicative of insufficient management by grazing or cutting. Lack of management may ultimately convert the community to tall-fen in some geographical areas.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		Sward composition: % cover of <i>Myrica gale</i> .	Record the % cover of <i>Myrica gale</i> in period early June - end of August.	No more than 10% cover	If <i>Myrica</i> cover outside target this shows that habitat is not being managed sufficiently eg lack of or insufficient grazing/cutting
		Sward composition: negative indicator species.	Record the frequency and % cover of negative indicator species. Record in period early June - end of August. <i>Senecio aquaticus</i>	No more than occasional throughout the sward or more than 5% cover	Outside target can discourage hay/grazing management because the species is toxic to livestock, and is palatable when dry.
		Sward structure: average height	Record sward height in period early June - end of August. (Upper target refers to pastures only.)	M24a Sward 5 cm or greater (excluding <i>Juncus</i> spp.) but no more than 25% over 60 cm M24b Sward 2 cm or greater (excluding <i>Juncus</i> spp.) but no more than 25% over 15 cm	Sward height above upper target shows that habitat is not being managed sufficiently eg lack of or insufficient grazing or if below lower target, is being overgrazed.
		Sward structure: litter	Record cover of litter where in a more or less continuous layer, distributed either in patches or in one larger area. Record in period early June - end of August for pastures.	Total extent no more than 25% of the sward	Outside target indicates biomass removal is insufficient eg lack of or insufficient grazing or not cut for hay.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		Sward structure: bare ground	Record extent of bare ground distributed through the sward, visible without disturbing the vegetation. Record in period early June - end of August.	No more than 10%	Outside target indicates problems with stock management eg poaching, supplementary feeding.
22.12/44 Hard oligo-mesotrophic waters with benthic vegetation of <i>Chara</i> formations	Almost exclusively type '4' of the GB Standing Water Classification. Very rarely types '5' and '10'.	Extent of <i>Chara</i> beds.	Check extent of <i>Chara</i> beds in July on an annual basis.	Maintain type and extent of <i>Chara</i> vegetation which is optimal for the interest feature. No significant decrease from reference level. Reference level to be determined.	<i>Chara</i> community. <i>Chara</i> formations of various species. Endangered/Vulnerable/Rare species are <i>Chara intermedia</i> , <i>Chara baltica</i> , <i>Chara canescens</i> , <i>Chara rudis</i> and <i>Chara connivens</i> ; and nationally scarce species are <i>Chara aspersa</i> , <i>Chara contraria</i> , <i>Chara pedunculata</i> and <i>Chara curta</i> . All are potentially components of a supporting community of <i>Miriophyllum spicatum</i> , <i>Potamogeton</i> species, <i>Callitriche</i> species and <i>Nymphaea alba/Nuphar lutea</i> . Lakes often fringed by <i>Phragmites australis</i> , <i>Typha angustifolia</i> and <i>Schoenoplectus lacustris</i> . Baseline survey should be carried out to determine present extent of <i>Chara</i> beds. Check for deterioration, extent of epiphytic growth on <i>Chara</i> . "Holes" in <i>Chara</i> beds should be monitored. <i>Elodea canadensis</i> should be absent. As <i>Chara</i> species are a colonising aspect of seral progression supporting macrophyte community may have to be managed to prevent seral progression. Extent will be variable according to site and can be variable according to seasonal changes In many cases <i>Chara</i> will be dominant feature.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Standing water- pond and ditch system.		Extent of supporting community including emergent vegetation.	Check community of associated macrophytes including, rare species, on an annual basis. Rare species include <i>Najas marina</i> . Maintain Chara and other species diversity.	Stable not expanding or contracting supporting community over 5 year period within limits of $\pm 10\%$ annually.	
		Water quality	Absence of filamentous algae and unicellular algal blooms. Establish Total P range by quarterly measurements over 3 year period, thereafter annually July/August.	For <i>Chara</i> vegetation $30 \mu\text{g l}^{-1}$ total phosphorus or below. Eutrophic conditions above $30 \mu\text{g l}^{-1}$ total phosphorus should not be prevalent.	Filamentous algae should be absent. The range of marl lakes exhibit a continuum of trophic condition from oligotrophy to low eutrophy. So the trophic condition for each marl lake type should be maintained. If filamentous algae present. Check for diffuse or point sources of pollution. Check Total P levels in aquifer if aquifer fed, check also that site not used for black-headed gull roosting or breeding. The target level should be set for individual SAC's and an acceptable range established. Increases in Total P level suggest need to move from annual July/August check back to more intensive quarterly samples to verify whether change is real.
		Sediment	Check condition of sediment and measure overall cover of marl every 10 years.	Marl production desirable, although this may be low or absent in oligotrophic hard waters. Some peat slumping acceptable, provided this is not induced due to land drainage.	Check immediate catchment area for drainage or land use change which might induce high sediment loads to enter system.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		Hydrology	Check water level in July annually.	Maintenance of stable water level desirable, although seasonal fluctuations expected.	Water level change downwards acceptable only in dry years. If lake level lowering due to outside water demands such as aquifer abstraction then counter measures need to be instigated.
River	Otter <i>Lutra lutra</i>	Water quality	EA scale	"Good", with no pollution incidents	Refer to Environment Agency for data
		Flow rate	Mean annual flow rate	No reduction attributable to increased abstraction.	Data from Environment Agency
		Site integrity	Total area	No reduction of fragmentation of area	
		Fish stocks	EA assessment	Fish stocks appropriate to the nutrient status of the river No significant decline in fish biomass or species diversity	Refer to Environment Agency for sample data
		Disturbance	Extent of public access to river	No significant change to river or bankside usage; no significant development	
		Bankside cover	Proportion of bank lined with trees, scrub or other thick cover	No overall permanent decrease	Some change acceptable as long as it is appropriately mitigated
		Presence of otters	Signs of otters	Signs of otters found at least once per year	Use data from national or county surveys

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
All habitats: Fen meadow, Swamp, Marginal and Inundation, Standing Water	Annex 1 species of European importance and waterfowl assemblage including migratory species of European and national importance.	Extent of habitat.	Area (ha), measured periodically (frequency to be determined).	No significant decrease from reference level.	For all habitats for all qualifying species. Methodology for assessing target to be determined. Reference level to be determined.
		Disturbance in roosting and feeding areas	Reduction or displacement of birds, measured periodically (frequency to be determined).	No significant displacement of birds attributable to human disturbance in relation to reference level.	All qualifying breeding and wintering annex 1 and migratory species. Methodology for assessing target to be determined. Reference level to be determined.
All habitats: Fen meadow, Swamp, Marginal and Inundation, Standing Water	Annex 1 species of European importance.	Food Availability	Abundance of live mammals and birds, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of food species year round in relation to reference level.	Small-medium sized mammals (voles, mice, rabbits) and birds (pipits to ducks) are important prey in the breeding season for marsh harriers and during the winter for hen harriers. Methodology for assessing target to be determined. Reference level to be determined.
Swamp, Marginal and Inundation	Annex 1 species of European importance.	Landscape	Large, unbroken expanse of emergent vegetation (feeding, concealment), measured periodically (frequency to be determined).	No significant reduction in expanse of emergent vegetation year round.	Marsh Harrier require continuous reed over >20ha. Methodology for assessing target to be determined.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Swamp, Marginal and Inundation	Annex 1 species of European importance.	Hydrology flow	Stable Water levels, measured periodically (frequency to be determined).	Water levels should not deviate significantly during the breeding season.	<10cm fluctuation is required during the breeding season for Marsh Harrier. Methodology for assessing target to be determined.
Standing Water	Migratory species of European importance.	Food Availability	Presence and abundance of aquatic plants, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of food species during the winter season in relation to reference level.	<i>Scirpus, Eleocharis, Carex, Potamogeton</i> and <i>Glyceria</i> for shoveler. Methodology for assessing target to be determined. Reference level to be determined.
Standing Water	Nationally important migratory species.	Food Availability	Presence and abundance of seed bearing plants, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of food species during the winter season in relation to reference level.	<i>Polygonum, Eleocharis, Rumex</i> and <i>Ranunculus</i> are important for Teal. Methodology for assessing target to be determined. Reference level to be determined.
Standing Water	Migratory species of European and national importance.	Food availability	Presence and abundance of aquatic invertebrates, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of prey species during the winter season in relation to reference level.	Hydrobia, crustaceans, caddisflies, diptera and beetles are important for shoveler. Hydrobia, flies, caddisfly, beetles and bugs are important for teal. Methodology for assessing target to be determined. Reference level to be determined.
Standing Water	Migratory species of European and national importance.	Water depth	Areas of shallow medium and deep water (feeding), measured periodically (frequency to be determined).	Water depths should not deviate significantly during the winter season.	Shoveler and teal require a water depth of <30cm. Methodology for assessing target to be determined.



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cSAC: The Broads
SPA: Broadland
Component SSSI: Decoy Carr, Acle

Conservation objectives for the European Interest on the SSSI

The conservation objectives for the European interest on the SSSI are:

to maintain*, in favourable condition, the:

- Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior*.
- Calcareous fens with *Cladium mariscus* and species of the *Carex davallianae*.
- Natural eutrophic lakes with *Magnopotamion* or *Hydrocharition*-type vegetation.
- *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*).

to maintain*, in favourable condition, the habitats for the population of:

- Otter (*Lutra lutra*).

to maintain*, in favourable condition, the habitats for the populations of Annex1 bird species⁺ of European importance with particular reference to:

- fen meadow with ditches and water bodies.

+Marsh harrier, Hen harrier.

to maintain*, in favourable condition, the habitats for the populations of migratory bird species⁺ of European importance with particular reference to:

- fen meadow with ditches and water bodies.

+ Shoveler.

maintain*, in favourable condition, the habitats of the populations of waterfowl that contribute to the wintering waterfowl assemblage of European importance, with particular reference to:

- fen meadow with ditches and water bodies.

* maintenance implies restoration if the feature is not currently in favourable condition.

The Conservation Objectives for The Broads candidate Special Area of Conservation and Broadland Special Protection Area are, in accordance with para C 10 of PPG 9, the reasons for which the cSAC was designated and the SPA classified. The entry of 30 January 1996 on the Register of European Sites gives the reasons for which the SPA was classified.

The **Broads cSAC** and **Broadland SPA** includes land within: Alderfen Broad SSSI, Ant Broads and Marshes SSSI, Barnby Broad and Marshes SSSI, Broad Fen, Dilham SSSI, Bure Broads and Marshes SSSI, Burgh Common and Muckfleet Marshes SSSI, Calthorpe Broad SSSI, Cantley Marshes SSSI, Crostwick Marsh SSSI, Decoy Carr, Acle SSSI, Ducan's Marsh, Claxton SSSI, Geldeston Meadows SSSI, Hall Farm Fen, Hemsby SSSI, Halvergate Marshes SSSI, Hardley Flood SSSI, Limpenhoe Meadows SSSI, Ludham-Potter Heigham Marshes SSSI, Poplar Farm Meadows, Langley SSSI, Priory Meadows, Hickling SSSI, Shallam Dyke Marshes, Thurne SSSI, Smallburgh Fen SSSI, Sprat's Water and Marshes, Carlton Colville SSSI, Stanley and Alder Carrs, Aldeby SSSI, Upper Thurne Broads and Marshes SSSI, Upton Broads and Marshes SSSI and Yare Broads and Marshes SSSI.

The **Broads cSAC** additionally includes land within: Damgate Marshes, Acle SSSI and Trinity Broads SSSI.

Favourable Condition Table for Decoy Carr, Acle SSSI

The Favourable Condition Table will be used by English Nature and other relevant authorities to determine if a site is in favourable condition. Favourable condition is achieved when the targets given below are met.

The favourable condition table should inform the scope and nature of any ‘appropriate assessment’ under the Habitats Regulations, but an appropriate assessment will also require consideration of issues specific to the individual plan or project. The favourable condition table does not by itself provide a comprehensive basis on which to assess plans and projects as required under Regulations 20-21, 24, 48-50 and 54 - 85. The scope and content of an appropriate assessment will depend upon the location, size and significance of the proposed project. English Nature will advise on a case by case basis.

Following an appropriate assessment, competent authorities are required to ascertain the effect on the integrity of the site. The integrity of the site is defined in para C10 of PPG9 as the coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified. The determination of favourable condition is separate from the judgement of effect upon integrity. For example, there may be a time-lag between a plan or project being initiated and a consequent adverse effect upon integrity becoming manifest in the condition assessment. In such cases, a plan or project may have an adverse effect upon integrity even though the site remains in favourable condition.

Annual counts for qualifying bird species will be used by English Nature, in the context of five year peak means, together with available information on UK population and distribution trends, to assess whether the SPA is continuing to make an appropriate contribution to the Favourable Conservation Status of the species across Europe.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Calcareous fens with <i>Cladium mariscus</i> and species of the <i>Caricion davallianae</i> Floodplain/valley mire (E33)	NVC type S24	Extent	Area (ha), measured periodically.	Maintain type and extent of NVC communities which are optimal for the interest feature. No significant decrease from reference level.	Map extent and position of main NVC communities, monitor every 5 years. Reference level to be determined.
		Sward composition	Frequency of <i>Cladium mariscus</i>	Maintain extent and abundance of <i>Cladium mariscus</i> .	Monitor <i>Cladium</i> every 5 years. Reference level to be determined.
			Floristic quality of <i>Phragmites australis</i> - <i>Peucedanum palustre</i> fen (S24) through the abundance of 'typical' species	Within the area occupied by target communities, the eponymous species and others of constancy V should be frequent.	Monitor every five years.
			Floristic quality of small sedge component of the vegetation	Maintain extent and abundance of small sedge component.	Monitor small sedge component every 5 years. Reference level to be determined
			Frequency or cover of tree / scrub spp.	No more than 5% cover, if in discrete stands, or no more than occasional throughout the sward	
		Sward structure	Extent of bare mud or peat visible without disturbing vegetation	No more than 5% of mire area	

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
			Frequency of hoof prints	No more than occasional over the mire as a whole	
		Water quality	Base rich, low fertility supply to vegetation	Maintain groundwater and other base rich-low nutrient water sources to the vegetation	These communities can be adversely affected by nutrient enrichment. In floodplain situations river water quality is critically important.
				Establish target base and NPK concentration and monitor annually.	It is important that irrigating waters are free from excessive plant nutrients. Reference level to be determined
		Water quantity	Hydrological regime.	Maintain appropriate hydrological regime to support recognised vegetation types. Reference level to be determined	Better understanding of the functioning of sites is required, including the importance of groundwater and piezometric head Install dipwells in a network or transect and measure at least bimonthly.
		Rare species.	Maintain or enhance populations of special or rare plant (and animal) species.	Species to be determined.	Identify special species and seek guidance in defining measures. Reference levels to be determined.
Molinia meadows on calcareous, peaty or clayey-silt-laden soils (<i>Molinion caeruleae</i>)	NVC type M24	Extent	Total area (ha), mapped in relation to a site-specific reference level to be determined, in period early June - end of August.	No reduction in area and any consequent fragmentation without prior consent	Recoverable reduction = unfavourable; non-recoverable reduction = partially destroyed. Temporary reductions related to natural variation in hydrological conditions should be noted as such where information allows.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Unimproved marshy grassland		Sward composition: positive indicator species	Record the frequency of positive indicator species from the list below to give an overall total of 2 frequent and 3 occasional. Record in period early June - end of August. <i>Anagallis tenella,</i> <i>Angelica sylvestris,</i> <i>Cirsium dissectum,</i> <i>Erica tetralix,</i> <i>Eupatorium cannabinum,</i> <i>Filipendula ulmaria,</i> <i>Galium uliginosum/</i> <i>Galium palustre,</i> Orchidaceae spp., <i>Pedicularis sylvatica,</i> <i>Potentilla erecta,</i> small blue-green <i>Carex</i> spp. (leaves less than 5mm wide) (<i>C. flacca, C.nigra, C.panicea</i>), <i>Sphagnum</i> spp., <i>Succisa pratensis,</i> <i>Valeriana dioica,</i> <i>Valeriana officinalis ,</i> <i>Viola palustris.</i>	Overall total of at least two species/taxa frequent plus at least three species/taxa occasional throughout the sward.	Choice of species related to NVC types, restriction to unimproved grassland and wetness characteristics of habitat, all satisfactory when inside target. Among possible species that could be used, choice further restricted by ease of identification, visibility in recording period.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		Sward composition: frequency and cover of <i>Molinia caerulea</i>	Record the frequency and % cover of <i>Molinia caerulea</i> . Record in period early June - end of August.	At least frequent throughout the sward but no more than 80% cover	<i>Molinia</i> is a characteristic component of the community and should thus be at least frequent. However, increasing cover exceeding upper target is indicative of insufficient management by grazing or cutting.
		Sward composition: negative indicator species	Record the frequency and % cover of negative indicator species. Record in period early June- end of August. <i>Cirsium arvense</i> , <i>Cirsium vulgare</i> , <i>Rumex crispus</i> , <i>Rumex obtusifolius</i> , <i>Urtica dioica</i> .	No species more than occasional throughout the sward or singly or together more than 5% cover	Invasive species chosen to indicate problems of eutrophication and disturbance from various sources when outside target eg poaching, stock feeding.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		Sward composition: cover of <i>Juncus</i> spp	Record the % cover of <i>Juncus</i> species from groups A and B. Record in period early June - end of August. Group A: jointed rushes (<i>Juncus acutiflorus</i> , <i>J. articulatus</i> , <i>J. subnodulosus</i>) Group B: <i>Juncus conglomeratus</i> , <i>J. effusus</i> and <i>J. inflexus</i> .	All species combined no more than 80% cover, of which no more than 50% made up of spp. from Group B	<i>Juncus spp</i> can be characteristic components of the communities. However, increasing cover is indicative of insufficient management by grazing or cutting and/or waterlogging. Group B species may indicate problems of eutrophication from various sources when outside target eg stock feeding, fertiliser use.
		*Sward composition: negative indicator species.	Record the % cover of negative indicator species. Record in period early June - end of August. <i>Cirsium palustre</i> .	No more than 20% cover.	This species may be indicative of disturbance from various sources when outside target eg poaching, stock feeding.
		*Sward composition: negative indicator species.	Record the % cover of negative indicator species. Record in period early June - end of August. <i>Deschampsia cespitosa</i>	No more than 10% cover.	Increasing cover of <i>Deschampsia cespitosa</i> outside target may be indicative of insufficient management by grazing or cutting, overgrazing, disturbance by excessive poaching or altered hydrology eg reduced water movement in the soil profile during the year resulting in anaerobic conditions. Increasing cover may lead to reduced species richness in the community.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		*Sward composition: negative indicator species	Record the % cover or frequency of negative indicator species in period early June - end of August. All tree and scrub species excluding <i>Salix repens</i> and <i>Myrica gale</i> , considered together. NB If scrub/tree species in pastures are more than occasional throughout the sward but less than 5% cover, they are soon likely to become a problem if grazing levels are not sufficient or if scrub control is not being carried out.	No more than 5% cover.	Invasive species outside target shows that habitat is not being managed sufficiently eg lack of or insufficient grazing/cutting
		*Sward composition: % cover of <i>Phragmites australis</i>	Record the % cover of <i>Phragmites australis</i> in period early June-end of August.	No more than 10% cover.	Increasing cover of <i>Phragmites australis</i> outside target may be indicative of insufficient management by grazing or cutting. Lack of management may ultimately convert the community to tall-fen in some geographical areas.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		Sward composition: % cover of <i>Myrica gale</i> .	Record the % cover of <i>Myrica gale</i> in period early June - end of August.	No more than 10% cover	If <i>Myrica</i> cover outside target this shows that habitat is not being managed sufficiently eg lack of or insufficient grazing/cutting
		Sward composition: negative indicator species.	Record the frequency and % cover of negative indicator species. Record in period early June - end of August. <i>Senecio aquaticus</i>	No more than occasional throughout the sward or more than 5% cover	Outside target can discourage hay/grazing management because the species is toxic to livestock, and is palatable when dry.
		Sward structure: average height	Record sward height in period early June - end of August. (Upper target refers to pastures only.)	M24a Sward 5 cm or greater (excluding <i>Juncus</i> spp.) but no more than 25% over 60 cm	Sward height above upper target shows that habitat is not being managed sufficiently eg lack of or insufficient grazing or if below lower target, is being overgrazed.
		Sward structure: litter	Record cover of litter where in a more or less continuous layer, distributed either in patches or in one larger area. Record in period early June - end of August for pastures.	Total extent no more than 25% of the sward	Outside target indicates biomass removal is insufficient eg lack of or insufficient grazing or not cut for hay.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		Sward structure: bare ground	Record extent of bare ground distributed through the sward, visible without disturbing the vegetation. Record in period early June - end of August.	No more than 10%	Outside target indicates problems with stock management eg poaching, supplementary feeding.
Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i>, <i>Alnion incanae</i>, <i>Salicion alvae</i>)	Parts of NVC types W2 and W5 and 6)	Extent	Extent/location of stands	<p>No loss of ancient semi-natural stands</p> <p>At least current area of recent semi-natural stands maintained, although their location may alter.</p> <p>At least the area of ancient woodland retained</p>	<p>* Stand loss due to natural processes eg in minimum intervention stands may be acceptable.</p> <p>* A high proportion of this type of woodland may be recent and hence a dynamic interchange with open wet communities may occur.</p> <p>* Stand destruction may occur if the understorey and ground flora are irretrievably damaged even if the canopy remains intact.</p> <p>* Loss = 0.5 ha or 0.5% of the stand area, whichever is the smaller.</p> <p>* 20% canopy cover is conventionally taken as the lower limit for an area to be considered as woodland. Stands of willow scrub may pose difficulties of definition.</p> <p>* Area and location of stands may be assessed remotely or by site visit.</p>

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		3.Regeneration potential	Successful establishment of young stems in gaps or on the edge of a stand	<p>* Signs of seedlings growing through to saplings to young trees at sufficient density to maintain canopy density over a 10 yr period (or equivalent regrowth from coppice stumps).</p> <p>* No planting in stands.</p>	<p>* A proportion of gaps at any one time may develop into permanent open space; equally some current permanent open space/glades may in time regenerate to closed canopy.</p> <p>* Regeneration may often occur on the edges of stands rather than in gaps within it.</p> <p>* In coppice most of the regeneration will be as stump regrowth. See JNCC Guidance Note on likely desirable levels of regeneration.</p> <p>* The minimum level of regeneration to be acceptable from a nature conservation viewpoint is likely to be much less than that needed where wood production is also an objective.</p> <p>* Assess this attribute by walking through the wood in spring/summer.</p>

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		4. Composition	Cover of native versus non-native species (all layers) Death, destruction or replacement of native woodland species through effects of non-native fauna or external unnatural factors	<p>* At least the current level of site-native species maintained.</p> <p>* At least 90% of cover in any one layer of site-native or acceptable naturalised species.</p> <p>* Death, destruction or replacement of native woodland species through effects of introduced fauna or other external unnatural factors not more than 10% by number or area in a five year period.</p>	<p>* In sites where there might be uncertainty as to what counts as site-native or as an acceptable naturalised species this must be made clear (eg the position of poplar).</p> <p>* Where cover in any one layer is less than 100% then the 90% target applies to the area actually covered by that layer.</p> <p>* Factors leading to the death or replacement of woodland species could include pollution, including eutrophication from adjacent farmland; new diseases (eg alder dieback).</p> <p>* Damage to species by non-native species that does not lead to their death or replacement by non woodland species (eg damage from squirrels to trees that non-the -less survive) is not necessarily unacceptable in nature conservation terms.</p> <p>* Excessive browsing/grazing by even native ungulates may be considered an unnatural external factor where it leads to undesirable shifts in the composition/structure of the stand, although this may be picked up by attributes 2 or 5 anyway.</p> <p>* Assess this attribute by a walk through the site.</p>

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		5. Species, habitats, structures characteristic of the site.	<p>Ground flora type</p> <p>Distinctive and desirable elements for a given site eg. locally uncommon species such as <i>Carex elata</i>; veteran trees or rich invertebrate assemblages.</p> <p>Patches of associated habitats and transitions eg to ash wood, open fen and open water</p>	<p>* 80% of ground flora cover referable to relevant NVC wet woodland community (W 2, 5 and 6)</p> <p>* Distinctive elements maintained at current levels and in current locations (where appropriate).</p> <p>* Patches and transitions maintained in extent and where appropriate location.</p>	<p>* Changes leading to these targets not being met may be acceptable where this is due to natural processes.</p> <p>* Distinctive elements and patches should be marked on maps for ease of checking in the field wherever possible.</p> <p>* If there are species groups/assemblages that cannot be assessed directly on a general site visit then surrogate features should be given where possible, eg dead wood concentrations for associated invertebrates.</p>

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
22.13 Natural eutrophic lakes with Magnopotamion or Hydrocharition type vegetation. Standing water-Turf ponds and ditch system	NVC types: A3 A9 A13 A4 Types '7', '8', '9' and '10' of the GB Standing Water Classification.	Extent of community.	Check extent of beds in July/August every 4 years.	Extensive beds of submerged macrophytes should be present. Maintain mixed community.	Submerged vegetation characterised by broad leaved <i>Potamogeton</i> species such as <i>Potamogeton perfoliatus</i> , <i>P lucens</i> , <i>P crispus</i> , <i>P natans</i> , <i>P x salicilifolius</i> , <i>P coloratus</i> , <i>P polygonifolius</i> , <i>P gramineus</i> , <i>P. alpinus</i> and <i>Hydrocharition</i> type vegetation. <i>Hydrocharis morsus-ranae</i> is a very rare associate with the <i>Magnopotamion</i> in the UK. Its community components are present, however, mainly <i>Spirodela polyrhiza</i> , <i>Lemna minor</i> , <i>Hippuris vulgaris</i> , <i>Utricularia vulgaris</i> and <i>Apium inundatum</i> . Community should be mixed and no one species should be present above 40% level of total amount of macrophyte presence.
		Extent of <i>Potamogeton</i> species <i>Magnopotamion</i> .	Check species presence in July/August every 4 years.	Maintain species presence of all <i>Magnopotamion</i> and fine leaved <i>Potamogetons</i> .	No one <i>Potamogeton</i> species should be present above 40% level of total amount or level of macrophyte presence (see Water Quality comment).
		Extent of nationally scarce or threatened species.	Establish population size and position of nationally scarce, rare or threatened species over a period of 3 years, on a quarterly basis; thereafter every two years in July/August.	Maintain presence of all nationally scarce, rare or threatened plant species.	Nationally scarce, rare or threatened species can vary in population size and extent due to temporal/seasonal changes in climate which affects physical variables such as water temperature.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		Water quality	Arrange for analysis of quarterly measurements of Total P for first three years; thereafter annually in July/August.	Maintain water quality particularly Total P levels. For southern systems 100 $\mu\text{g l}^{-1}$ or below, down to 65 $\mu\text{g l}^{-1}$.	The variable targets for Total P reflects the geographical range of this trophic state. The target for Total P should be set for individual SAC's and an acceptable range established. Increases in Total P suggest a need to move from annual July/August check, back to more intensive quarterly samples to verify whether change is real. Also check for cover shifts of macrophytes and dominant presence of pollution tolerant species above 40% level such as <i>Potamogeton pectinatus</i> , <i>Myriophyllum spicatum</i> and/or <i>Ceratophyllum demersum</i> .
		Water quantity	Check lake levels during July/August.	Maintain hydrology of ponds and ditch system.	Hydrology involves not only pond or ditch levels but flushing rates; prevent lowering or raising of pond or ditch level through modification of outfalls. With ditch systems aim for constant high water table throughout the year Water abstraction may represent a significant issue through the reduction of ground water and flushing flows into marginal ditch systems.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		Sediment	Check for excessive growths of individual macrophytes ie above 40%.	Maintain sediment quality and quantity.	Effects of increased macrophyte growth also relates to water quality; if this is at target levels, then enrichment of sediments is an issue if broad leaved <i>Potamogeton</i> species decline and fine leaved <i>Potamogeton pectinatus</i> increases above 40% level or <i>Myriophyllum spicatum</i> / <i>Ceratophyllum demersum</i> become dominant. Introduced fish and recreational use of site might through sediment disturbance move sites out of favourable condition. Check for increases in siltation from catchment use changes or changes in sewage treatment.
River	Otter <i>Lutra lutra</i>	Water quality	EA scale	"Good", with no pollution incidents	Refer to Environment Agency for data
		Flow rate	Mean annual flow rate	No reduction attributable to increased abstraction.	Data from Environment Agency
		Site integrity	Total area	No reduction of fragmentation of area	
		Fish stocks	EA assessment	Fish stocks appropriate to the nutrient status of the river No significant decline in fish biomass or species diversity	Refer to Environment Agency for sample data
		Disturbance	Extent of public access to river	No significant change to river or bankside usage; no significant development	

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		Bankside cover	Proportion of bank lined with trees, scrub or other thick cover	No overall permanent decrease	Some change acceptable as long as it is appropriately mitigated
		Presence of otters	Signs of otters	Signs of otters found at least once per year	Use data from national or county surveys
All habitats: Grassland Improved, Swamp, Marginal and Inundation, Standing Water	Annex 1 species of European importance and waterfowl assemblage including migratory species of European and national importance.	Extent of habitat.	Area (ha), measured periodically (frequency to be determined).	No significant decrease from reference level.	For all habitats for all qualifying species. Methodology for assessing target to be determined. Reference level to be determined.
		Disturbance in roosting and feeding areas	Reduction or displacement of birds, measured periodically (frequency to be determined).	No significant displacement of birds attributable to human disturbance in relation to reference level.	All qualifying breeding and wintering annex 1 and migratory species. Methodology for assessing target to be determined. Reference level to be determined.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
All habitats: Grassland Improved, Swamp, Marginal and Inundation, Standing Water	Annex 1 species of European importance.	Food Availability	Abundance of live mammals and birds, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of food species year round in relation to reference level.	Small-medium sized mammals (voles, mice, rabbits) and birds (pipits to ducks) are important prey in the breeding season for marsh harriers and during the winter for hen harriers. Methodology for assessing target to be determined. Reference level to be determined.
Swamp, Marginal and Inundation	Annex 1 species of European importance.	Landscape	Large, unbroken expanse of emergent vegetation (nesting, feeding, concealment), measured periodically (frequency to be determined).	No significant reduction in expanse of emergent vegetation year round.	Marsh Harrier require continuous reed over >20ha. Methodology for assessing target to be determined.
Swamp, Marginal and inundation	Annex 1 species of European importance.	Water depth	Shallow water within emergent vegetation, measured periodically (frequency to be determined).	Water depth and extent of shallows within emergent vegetation should not deviate significantly year round.	Marsh harrier require water throughout the emergent vegetation of 10-30cm. Methodology for assessing target to be determined.
Swamp, Marginal and Inundation	Annex 1 species of European importance.	Hydrology flow	Stable Water levels, measured periodically (frequency to be determined).	Water levels should not deviate significantly during the breeding season.	<10cm fluctuation is required during the breeding season for Marsh Harrier. Methodology for assessing target to be determined.



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pSPA: Breckland
cSAC: Breckland
Component SSSI: Deadman's Grave, Icklingham

Conservation objective for the European Interest on the SSSI

The conservation objectives for the European interests on the SSSI are :

to maintain*, in favourable condition, the:

- Semi-natural dry grasslands and scrubland facies: on calcareous substrates (*Festuco-Brometalia*)

to maintain*, in favourable condition, the habitats for the populations of the Annex 1 bird species⁺, of European importance, with particular reference to:

- heathland
- acid grassland
- chalk grassland and/or inland dune communities

⁺ Woodlark, Nightjar, Stone Curlew

* maintenance implies restoration if the feature is not currently in favourable condition.

The Conservation Objectives for Breckland proposed Special Protection Area and Breckland candidate Special Area of Conservation are, in accordance with para C 10 of PPG 9, the reasons for which the pSPA was proposed and the SAC designated .

The Breckland cSAC and the Breckland pSPA include land within:

Barnhamcross Common SSSI	Gooderstone Warren SSSI
Berner's Heath, Icklingham SSSI	Grime's Graves SSSI
Bridgham and Brettenham Heaths SSSI	Lakenheath Warren SSSI
Cavenham - Icklingham Heaths SSSI	Stanford Training Area SSSI
Cranwich Camp SSSI	Thetford Golf Course and Marsh SSSI
Deadman's Grave, Icklingham SSSI	Thetford Heath SSSI
East Wretham Heath SSSI	Wangford Warren and Carr SSSI
Field Barn Heaths, Hilborough SSSI	Weather and Horn Heaths SSSI
Foxhole Heath, Eriswell SSSI	Weeting Heath SSSI

The Breckland cSAC also includes land within:

Maidencross Hill SSSI	RAF Lakenheath SSSI
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The Breckland pSPA also includes land within

Barnham Heath SSSI	Little Heath, Barnham SSSI
Beeches Pit, West Stow SSSI	Old Bodney Camp SSSI
Cranberry Rough, Hockham SSSI	Rex Graham Reserve SSSI
Eriswell Low Warren SSSI	Warren Hill SSSI
High Lodge, Mildenhall SSSI	West Stow Heath SSSI
How Hill Track SSSI	

The Favourable Condition Table will be used by English Nature and other relevant authorities to determine if a site is in favourable condition. Favourable condition is achieved when the targets given below are met.

The favourable condition table should inform the scope and nature of any 'appropriate assessment' under the Habitats Regulations, but an appropriate assessment will also require consideration of issues specific to the individual plan or project. The favourable condition table does not by itself provide a comprehensive basis on which to assess plans and projects as required under Regulations 20-21, 24, 48-50 and 54 - 85. The scope and content of an appropriate assessment will depend upon the location, size and significance of the proposed project. English Nature will advise on a case by case basis.

Following an appropriate assessment, competent authorities are required to ascertain the effect on the integrity of the site. The integrity of the site is defined in para C10 of PPG9 as the coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified. The determination of favourable condition is separate from the judgement of effect upon integrity. For example, there may be a time-lag between a plan or project being initiated and a consequent adverse effect upon integrity becoming manifest in the condition assessment. In such cases, a plan or project may have an adverse effect upon integrity even though the site remains in favourable condition.

Annual counts for qualifying bird species will be used by English Nature, in the context of five year peak means, together with available information on UK population and distribution trends, to assess whether the SPA is continuing to make an appropriate contribution to the Favourable Conservation Status of the species across Europe.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Unimproved calcareous grassland	CG7b	*Extent	Total area (approx. 45ha), as mapped by Moore(1991), in period end April-mid July.	No reduction in area and any consequent fragmentation without prior consent	Recoverable reduction = unfavourable; non-recoverable reduction = partially destroyed. Excludes bare ground associated with rabbit warrens (see below).
		*Sward composition: positive indicator species	Record the frequency of positive indicator species in period end April-mid July. <i>Aira</i> spp., <i>Aphanes</i> spp., <i>Astragalus danicus</i> , <i>Centaureum erythraea</i> , <i>Cladonia</i> spp , <i>Dianthus deltoides</i> , <i>Erigeron acer</i> , <i>Erodium cicutarium</i> , <i>Fragaria vesca</i> , <i>Galium verum</i> , <i>Helianthemum nummularium</i> , <i>Leontodon hispidus/L. saxatilis</i> , <i>Lotus corniculatus</i> , <i>Ornithopus perpusillus</i> , <i>Pilosella officinarum (Hieracium pilosella)</i> , <i>Plantago coronopus</i> , <i>Rumex acetosella</i> , <i>Sedum acre</i> , <i>Teesdalia nudicaulis</i> , <i>Thymus</i> spp.	At least two species/taxa frequent and four species/taxa occasional throughout the sward	Choice of species related to NVC type and restriction to unimproved grassland, considered satisfactory when inside target. Among possible species that could be used, choice further restricted by ease of identification, visibility in recording period.
		*Sward composition: negative indicator species	Record the frequency and % cover of negative indicator species. Record in period end April-mid July. <i>Carduus nutans</i> , <i>Chamerion angustifolium</i> , <i>Cirsium arvense</i> , <i>Cirsium vulgare</i> , <i>Plantago major</i> , <i>Urtica dioica</i> .	No species/taxa more than occasional throughout the sward or singly or together more than 5% cover	Invasive species chosen to indicate problems of eutrophication and disturbance from various sources when outside target eg poaching, stock feeding.
		*Sward composition: negative indicator species	Record the frequency and % cover of all tree and scrub species excluding <i>Juniperus communis</i> , considered together, in period end April-mid July. NB If scrub/tree species are more than occasional throughout the sward but less than 5% cover, they are soon likely to become a problem if grazing levels are not sufficient or if scrub control is not being carried out.	No more than 5% cover.	Invasive species outside target shows that habitat is not being managed sufficiently eg under-grazed.
		*Sward composition: negative indicator species	Record % cover of coarse grasses eg <i>Holcus lanatus</i> , <i>Dactylis glomerata</i> , in period end April-mid July.	No more than 10% cover	Invasive species chosen to indicate problems of eutrophication and insufficient removal of biomass eg under-grazing
		Sward composition: negative	Record frequency of <i>Senecio jacobaea</i> , in period end April-mid July.	No more than occasional throughout the sward	Frequency outside target indicates management problems eg over-grazing and trampling.

		indicator species			
		Sward structure: average height	Record sward height in period end April-mid July.	Sward 5 cms or less	Outside target indicates insufficient grazing.
		Sward structure: litter	Record cover of litter where in a more or less continuous layer, distributed either in patches or in one larger area, in period end April-mid July.	Total extent no more than 25% of the sward	Outside target indicates biomass removal is insufficient eg under-grazed.
		Sward structure: bare ground	Record extent of bare ground (not rock) distributed through the sward, visible without disturbing the vegetation, in period end April-mid July.	No more than 15% .	Outside target indicates management problems eg over-grazing.
		Sward structure: localized bare ground	Record extent of localized bare ground around rabbit warrens.	No more than 0.25 ha ie approximately 50x50 metres	Heavy rabbit grazing usually associated with type but outside target indicates rabbit grazing and disturbance levels are too high.
	CG7c	*Extent	Total area (0.5ha), as mapped by Moore(1991), in period end April-August.	No reduction in area and any consequent fragmentation without prior consent	Recoverable reduction = unfavourable; non-recoverable reduction = partially destroyed.
		*Sward composition: lichen cover	Record % cover of bushy or plate-like lichens, which may encrust the soil surface, rocks, pebbles or acrocarpous (unbranched) bryophytes.	15-90%	Outside target indicates principal component of interest deteriorating eg from trampling damage, competition from vascular plants or bryophytes, or possibly the effects of atmospheric deposition.
		*Sward composition: presence of rare and scarce lichen species	Record identity and extent (abundance) of rare and scarce lichen species (specific to site). <i>Buellia asterella</i> <i>Squamarina lentigera</i> (Baseline of extent yet to be determined)	Continued presence of rare and scarce species and no decline in extent (abundance)	Rare and scarce lichens are important contributors to the intertidal feature. Decline may be due to a number of factors including atmospheric deposition and insufficient grazing.
		*Sward composition: negative indicator species	Record the frequency and % cover of negative indicator species. Record in period end April-August. <i>Carduus nutans</i> , <i>Chamerion angustifolium</i> , <i>Cirsium arvense</i> , <i>Cirsium vulgare</i> , <i>Plantago major</i> , <i>Pteridium aquilinum</i> , <i>Urtica dioica</i> , coarse grasses eg <i>Holcus lanatus</i> .	No species/taxa more than occasional throughout the sward or singly or together more than 5% cover	Invasive species chosen to indicate problems of eutrophication and disturbance from various sources when outside target eg poaching, stock feeding.
		*Sward composition: negative indicator species	Record the frequency and % cover of all tree and scrub species, considered together, in period end April-August. NB If scrub/tree species are more than occasional throughout the sward but less than 1% cover, they are soon likely to become a problem if grazing levels are not sufficient or if scrub control is not being carried out.	No more than 1% cover.	Invasive species outside target shows that habitat is not being managed sufficiently eg under-grazed.
		*Sward	Record % cover of mat-like, branching	No more than 50% cover	Outside target indicates competition

		composition: negative indicator species	(pleurocarpous) bryophytes.		from robust pleurocarpous bryophytes is a problem eg because of under-grazing or eutrophication
		Sward composition: negative indicator species	Record frequency of <i>Senecio jacobaea</i> , in period end April-August.	No more than occasional throughout the sward	Frequency outside target indicates management problems eg over-grazing and trampling.
		Sward structure: average height	Record sward height in period end April-August.	Sward 5 cms or less	Outside target indicates insufficient grazing.
		Sward structure: litter	Record cover of litter where in a more or less continuous layer, distributed either in patches or in one larger area, in period end April-August.	Total extent no more than 5% of the sward	Outside target indicates biomass removal is insufficient eg under-grazed.
		*Sward structure: bare ground	Record extent of bare ground distributed through the sward, visible without disturbing the vegetation. Includes flints, pebbles and tiny tufts of acrocarpous (unbranched) bryophytes. Measure in period end April-August.	10-50%	Inside target indicates open conditions required by lichens are available.
		Sward structure: rabbit grazing levels	Record frequency of rabbit droppings.	Rabbit droppings frequent throughout the sward.	Heavy rabbit grazing usually strongly associated with the habitats creating conditions suitable for lichens.
All habitats; heathland, acid grassland, chalk grassland and/or inland dune communities	Annex 1 populations of European importance: stone-curlew, nightjar, woodlark	Extent and distribution of habitat	Area, measured periodically (frequency to be determined)	No significant decrease from reference level.	Methodology for assessing target to be determined. Reference level to be determined.
	Annex 1 populations of European importance: stone-curlew, nightjar, woodlark	Disturbance	Reduction or displacement of birds, measured periodically (frequency to be determined)	No significant reduction or displacement of birds attributable to human disturbance in relation to reference level.	Methodology for assessing target to be determined. Reference level to be determined.
	Annex 1 population of European importance: stone-curlew	Food availability -	Abundance of soil and dung invertebrates, measured periodically (frequency to be determined)	Presence and abundance of prey species should not deviate significantly from reference level	Including e.g. beetles, grasshoppers, flies, earthworms, snails, slugs. Methodology for assessing target to be determined. Reference level to be determined.
	Annex 1 population of European	Food availability	Abundance of night-flying insects, measured periodically (frequency to be determined).	Presence and abundance of prey species should not deviate significantly from reference level.	Moths and beetles are important for nightjar.

	importance: nightjar				Methodology for assessing target to be determined. Reference level to be determined.
	Annex 1 population of European importance: woodlark	Food availability	Abundance of ground-surface invertebrates, measured periodically (frequency to be determined).	Presence and abundance of prey species should not deviate from reference level.	Including e.g. spiders, weevils, caterpillars. Methodology for assessing target to be determined. Reference level to be determined.
	Annex 1 population of European importance: stone-curlew	Vegetation characteristics	Extent and proportions of patches of at least half-hectare with vegetation less than 2cm high and at least 10% bare ground and unrestricted views over 200m, patches of medium height vegetation for roosting, measured periodically (frequency to be determined).	No significant decrease in extent and proportions of patches of at least half-hectare with vegetation less than 2cm high and at least 10% bare ground and unrestricted views over 200m, patches of medium height vegetation for roosting, measured periodically; from reference level.	Methodology for assessing target to be determined. Reference level to be determined.
	Annex 1 population of European importance: nightjar	Vegetation characteristics	open ground with low vegetation (feeding), and sparse woodland / scrub cover (feeding, roosting).	No significant decrease in extent and proportions of open ground with predominantly low vegetation (feeding), and sparse woodland / scrub cover (feeding, roosting) from reference level.	Nightjar require vegetation mostly 20-60cm high with less than 50% tree/scrub cover overall. Reference level to be determined.
	Annex 1 population of European importance: woodlark	Vegetation characteristics	Extent and proportions of mix of shrub / tree cover (display), short-medium vegetation and bare ground (feeding, roosting, nesting), measured periodically (frequency to be determined).	No significant decrease in extent and proportions of mix of shrub / tree cover (display), short-medium vegetation and bare ground (feeding, roosting, nesting).	Frequent bare patches under 0.5 ha within mosaic of short (under 5cm high) to medium (10-20cm high) ground vegetation, and small clumps of shrubs or trees. Methodology for assessing target to be determined. Reference level to be determined.

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cSAC: The Broads
Component SSSI: Damgate Marshes, Acle

Conservation objectives for the European Interest on the SSSI

The conservation objective for the European interest on the SSSI is:

to maintain*, in favourable condition, the:

Natural eutrophic lakes with *Magnopotamion* or *Hydrocharition*-type vegetation.

to maintain*, in favourable condition, the habitats for the population of:

- Otter (*Lutra lutra*).

* maintenance implies restoration if the feature is not currently in favourable condition.

The Conservation Objectives for The Broads candidate Special Area of Conservation are in accordance with para C 10 of PPG 9, the reasons for which the cSAC was designated.

The **Broads cSAC** includes land within: Alderfen Broad SSSI, Ant Broads and Marshes SSSI, Barnby Broad and Marshes SSSI, Broad Fen, Dilham SSSI, Bure Broads and Marshes SSSI, Burgh Common and Muckfleet Marshes SSSI, Calthorpe Broad SSSI, Cantley Marshes SSSI, Crostwick Marsh SSSI, Damgate Marshes, Acle SSSI, Decoy Carr, Acle SSSI, Ducan's Marsh, Claxton SSSI, Geldeston Meadows SSSI, Hall Farm Fen, Hemsby SSSI, Halvergate Marshes SSSI, Hardley Flood SSSI, Limpenhoe Meadows SSSI, Ludham-Potter Heigham Marshes SSSI, Poplar Farm Meadows, Langley SSSI, Priory Meadows, Hickling SSSI, Shallam Dyke Marshes, Thurne SSSI, Smallburgh Fen SSSI, Sprat's Water and Marshes, Carlton Colville SSSI, Stanley and Alder Carrs, Aldeby SSSI, Trinity Broads SSSI, Upper Thurne Broads and Marshes SSSI, Upton Broads and Marshes SSSI and Yare Broads and Marshes SSSI.

Favourable Condition Table for Damgate Marshes, Acle SSSI

The Favourable Condition Table will be used by English Nature and other relevant authorities to determine if a site is in favourable condition. Favourable condition is achieved when the targets given below are met.

The favourable condition table should inform the scope and nature of any 'appropriate assessment' under the Habitats Regulations, but an appropriate assessment will also require consideration of issues specific to the individual plan or project. The favourable condition table does not by itself provide a comprehensive basis on which to assess plans and projects as required under Regulations 20-21, 24, 48-50 and 54 - 85. The scope and content of an appropriate assessment will depend upon the location, size and significance of the proposed project. English Nature will advise on a case by case basis.

Following an appropriate assessment, competent authorities are required to ascertain the effect on the integrity of the site. The integrity of the site is defined in para C10 of PPG9 as the coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified. The determination of favourable condition is separate from the judgement of effect upon integrity. For example, there may be a time-lag between a plan or project being initiated and a consequent adverse effect upon integrity becoming manifest in the condition assessment. In such cases, a plan or project may have an adverse effect upon integrity even though the site remains in favourable condition.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
22.13 Natural eutrophic lakes with Magnopotamion or Hydrocharitoid type vegetation. Standing water-ditch system	NVC types: A3 A9 A13 A4 Types '7', '8', '9' and '10' of the GB Standing Water Classification.	Extent of community.	Check extent of beds in July/August every 4 years.	Extensive beds of submerged macrophytes should be present. Maintain mixed community.	Submerged vegetation characterised by broad leaved <i>Potamogeton</i> species such as <i>Potamogeton perfoliatus</i> , <i>P lucens</i> , <i>P crispus</i> , <i>P natans</i> , <i>P x salicifolius</i> , <i>P coloratus</i> , <i>P polygonifolius</i> , <i>P gramineus</i> , <i>P. alpinus</i> and <i>Hydrocharitoid</i> type vegetation. <i>Hydrocharis morsus-ranae</i> is a very rare associate with the <i>Magnopotamion</i> in the UK. Its community components are present, however, mainly <i>Spirodela polyrhiza</i> , <i>Lemna minor</i> , <i>Hippuris vulgaris</i> , <i>Utricularia vulgaris</i> and <i>Apium inundatum</i> . Community should be mixed and no one species should be present above 40% level of total amount of macrophyte presence.
		Extent of <i>Potamogeton</i> species <i>Magnopotamion</i> .	Check species presence in July/August every 4 years.	Maintain species presence of all <i>Magnopotamion</i> and fine leaved <i>Potamogetons</i> .	No one <i>Potamogeton</i> species should be present above 40% level of total amount or level of macrophyte presence (see Water Quality comment).
		Extent of nationally scarce or threatened species.	Establish population size and position of nationally scarce, rare or threatened species over a period of 3 years, on a quarterly basis; thereafter every two years in July/August.	Maintain presence of all nationally scarce, rare or threatened plant species.	Nationally scarce, rare or threatened species can vary in population size and extent due to temporal/seasonal changes in climate which affects physical variables such as water temperature.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		Water quality	Arrange for analysis of quarterly measurements of Total P for first three years; thereafter annually in July/August.	Maintain water quality particularly Total P levels. For southern systems 100 $\mu\text{g l}^{-1}$ or below, down to 65 $\mu\text{g l}^{-1}$.	The variable targets for Total P reflects the geographical range of this trophic state. The target for Total P should be set for individual SAC's and an acceptable range established. Increases in Total P suggest a need to move from annual July/August check, back to more intensive quarterly samples to verify whether change is real. Also check for cover shifts of macrophytes and dominant presence of pollution tolerant species above 40% level such as <i>Potamogeton pectinatus</i> , <i>Myriophyllum spicatum</i> and/or <i>Ceratophyllum demersum</i> .
		Water quality	Arrange for analysis of conductivity for first three years; thereafter annually in July/August.	Maintain water conductivity optimally below 1000-1200 $\mu\text{S/cm}$.	Measurements above 2000 $\mu\text{S/cm}$ are damaging to the interest feature. Road runoff, especially after salting is damaging to interests.
		Water quantity	Check lake levels during July/August.	Maintain hydrology of ditch system.	Hydrology involves not only ditch levels but flushing rates; prevent lowering or raising of ditch level through modification of outfalls. With ditch systems aim for constant high water table throughout the year Water abstraction may represent a significant issue through the reduction of ground water and flushing flows into marginal ditch systems.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		Sediment	Check for excessive growths of individual macrophytes ie above 40%.	Maintain sediment quality and quantity.	Effects of increased macrophyte growth also relates to water quality; if this is at target levels, then enrichment of sediments is an issue if broad leaved <i>Potamogeton</i> species decline and fine leaved <i>Potamogeton pectinatus</i> increases above 40% level or <i>Myriophyllum spicatum</i> / <i>Ceratophyllum demersum</i> become dominant. Introduced fish and recreational use of site might through sediment disturbance move sites out of favourable condition. Check for increases in siltation from catchment use changes or changes in sewage treatment.
River	Otter <i>Lutra lutra</i>	Water quality	EA scale	"Good", with no pollution incidents	Refer to Environment Agency for data
		Flow rate	Mean annual flow rate	No reduction attributable to increased abstraction.	Data from Environment Agency
		Site integrity	Total area	No reduction of fragmentation of area	
		Fish stocks	EA assessment	Fish stocks appropriate to the nutrient status of the river No significant decline in fish biomass or species diversity	Refer to Environment Agency for sample data
		Disturbance	Extent of public access to river	No significant change to river or bankside usage; no significant development	
		Bankside cover	Proportion of bank lined with trees, scrub or other thick cover	No overall permanent decrease	Some change acceptable as long as it is appropriately mitigated
		Presence of otters	Signs of otters	Signs of otters found at least once per year	Use data from national or county surveys



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cSAC: The Broads
SPA: Broadland
Component SSSI: Crostwick Marsh

Conservation objectives for the European Interest on the SSSI

The conservation objectives for the European interest on the SSSI are:

to maintain*, in favourable condition, the habitats for the population of:

- Desmoulin's whorl snail (*Vertigo moulinsiana*).
- Otter (*Lutra lutra*).

to maintain*, in favourable condition, the habitats for the populations of Annex1 bird species⁺ of European importance with particular reference to:

- fen
- lowland wet grassland with ditches.

+ Marsh harrier, Hen harrier.

to maintain*, in favourable condition, the habitats of the populations of waterfowl that contribute to the wintering waterfowl assemblage of European importance with particular reference to:

- fen and lowland wet grassland with ditches.

* maintenance implies restoration if the feature is not currently in favourable condition.

The Conservation Objectives for The Broads candidate Special Area of Conservation and Broadland Special Protection Area are, in accordance with para C 10 of PPG 9, the reasons for which the cSAC was designated and the SPA classified. The entry of 30 January 1996 on the Register of European Sites gives the reasons for which the SPA was classified.

The **Broads cSAC** and **Broadland SPA** includes land within: Alderfen Broad SSSI, Ant Broads and Marshes SSSI, Barnby Broad and Marshes SSSI, Broad Fen, Dilham SSSI, Bure Broads and Marshes SSSI, Burgh Common and Muckfleet Marshes SSSI, Calthorpe Broad SSSI, Cantley Marshes SSSI, Crostwick Marsh SSSI, Decoy Carr, Acle SSSI, Ducan's Marsh, Claxton SSSI, Geldeston Meadows SSSI, Hall Farm Fen, Hemsby SSSI, Halvergate Marshes SSSI, Hardley Flood SSSI, Limpenhoe Meadows SSSI, Ludham-Potter Heigham Marshes SSSI, Poplar Farm Meadows, Langley SSSI, Priory Meadows, Hickling SSSI, Shallam Dyke Marshes, Thurne SSSI, Smallburgh Fen SSSI, Sprat's Water and Marshes, Carlton Colville SSSI, Stanley and Alder Carrs, Aldeby SSSI, Upper Thurne Broads and Marshes SSSI, Upton Broads and Marshes SSSI and Yare Broads and Marshes SSSI.

The **Broads cSAC** additionally includes land within: Damgate Marshes, Acle SSSI and Trinity Broads SSSI.

Favourable Condition Table for Crostwick Marsh SSSI

The Favourable Condition Table will be used by English Nature and other relevant authorities to determine if a site is in favourable condition. Favourable condition is achieved when the targets given below are met.

The favourable condition table should inform the scope and nature of any 'appropriate assessment' under the Habitats Regulations, but an appropriate assessment will also require consideration of issues specific to the individual plan or project. The favourable condition table does not by itself provide a comprehensive basis on which to assess plans and projects as required under Regulations 20-21, 24, 48-50 and 54 - 85. The scope and content of an appropriate assessment will depend upon the location, size and significance of the proposed project. English Nature will advise on a case by case basis.

Following an appropriate assessment, competent authorities are required to ascertain the effect on the integrity of the site. The integrity of the site is defined in para C10 of PPG9 as the coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified. The determination of favourable condition is separate from the judgement of effect upon integrity. For example, there may be a time-lag between a plan or project being initiated and a consequent adverse effect upon integrity becoming manifest in the condition assessment. In such cases, a plan or project may have an adverse effect upon integrity even though the site remains in favourable condition.

Annual counts for qualifying bird species will be used by English Nature, in the context of five year peak means, together with available information on UK population and distribution trends, to assess whether the SPA is continuing to make an appropriate contribution to the Favourable Conservation Status of the species across Europe.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
River	Otter <i>Lutra lutra</i>	Water quality	EA scale	"Good", with no pollution incidents	Refer to Environment Agency for data
		Flow rate	Mean annual flow rate	No reduction attributable to increased abstraction.	Data from Environment Agency
		Site integrity	Total area	No reduction of fragmentation of area	
		Fish stocks	EA assessment	Fish stocks appropriate to the nutrient status of the river No significant decline in fish biomass or species diversity	Refer to Environment Agency for sample data
		Disturbance	Extent of public access to river	No significant change to river or bankside usage; no significant development	
		Bankside cover	Proportion of bank lined with trees, scrub or other thick cover	No overall permanent decrease	Some change acceptable as long as it is appropriately mitigated
		Presence of otters	Signs of otters	Signs of otters found at least once per year	Use data from national or county surveys

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Rivers fens	Desmoulins whorl snail <i>Vertigo moulinsiana</i>	structure and composition of marginal vegetation	Length or area of stand of appropriate vegetation	The extent of suitable habitat should be maintained, compared to the extent on a baseline map, over appropriate lengths of river or area of fen or pool margin [length of river or area of fen or swamp, and number of sample stretches to be decided locally]. Suitable vegetation will be dense, unbroken stands of <i>Glyceria maxima</i> , <i>Carex riparia</i> , <i>C. acutiformis</i> , <i>C. paniculata</i> , <i>Cladium mariscus</i> and/or sparse <i>Phragmites</i> and <i>Phalaris arundinacea</i> .	It is expected that traditional and accepted river management will cause local deterioration of some stands but the aim is to ensure that habitat in appropriate condition is present at frequent intervals along a river corridor. The snail appears to be able to colonise new adjacent stands rapidly, and closely spaced, fragmented patches may provide acceptable conditions for this species. Habitat should be a suitable size and linked to rivers and waterways hydrologically and not separated by barriers such as mown paths.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Rivers fens		water table	1. depth below ground level; 2 & 3. vegetation indicators of drying out.	1. Water table must be close to the surface so that the ground remains squelchy all year, i.e. never drying out, so that, even in high summer, water will rise when the soil is trodden. Winter flooding is permissible. 2. Not more than 10% (occasional on the DAFOR scale) replacement of preferred dominant species by dense tall reed or by plants of drier conditions, e.g. <i>Urtica dioica</i> , <i>Epilobium hirsutum</i> , and low grasses invading the litter layer, within pre-selected stands (as selected for	<i>V. moulinsiana</i> requires highly humid conditions which are met by a high water table below the stands of vegetation in which it lives. Unfavourably wet conditions can result from prolonged flooding in summer or water penning being set too high. Current research (2000-01) will refine acceptable limits and measures for soil moisture. measuring extent). 3. Not more than 10% (occasional on the DAFOR scale) replacement of tall monocotyledons by plants preferring wetter conditions, e.g. <i>Rorippa nasturtium-aquaticum</i> , <i>Apium nodiflorum</i> and <i>Berula erecta</i> .
Rivers fens		vegetation height	height of bulk of the vegetation	Average height of the stands no less than 50 cm.	<i>V. moulinsiana</i> requires tall leaves on which it lives most of the year. Heavy grazing and mowing may be detrimental if it removes most taller clumps.
Rivers fens		shading by shrubs and trees (e.g. willow, alder)	proportion of habitat	Less than 10% increase in area of shade, compared to extent on the baseline map.	

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
rivers fens		water quality	Biological class - Environment Agenc's General Quality Assessment scheme. Assess every 5 years River Ecosystem Class. Assess against Environment Agency monitoring results. Suspended solides	>='b' In addition, no drop in class from exiting situation. >= RE3 In addition,no drop in class from exiting situation.	Although the snail lives out of the water, water quality may influence vegetation structure and perhaps the microflora living on the leaf surfaces where the snail feeds, and chemical quality may directly affect the snail when it is submerged during floods. Future experience and research may indicate that these variables are inapplicable to <i>V. moulinsiana</i> . No values are given for suspended solids as this pollutant has no direct influence on the condition of the habitat for moulinsiana. No monitoring targets are set for hardness but assessments for projects must take account of the snail's need for water whose hardness must not fall below value expected for the catchment.
All habitats: Grassland Improved, Swamp, Marginal and Inundation, Standing Water	Annex 1 species of European importance and waterfowl assemblage including migratory species of national importance.	Extent of habitat.	Area (ha), measured periodically (frequency to be determined).	No significant decrease from reference level.	For all habitats for all qualifying species. Methodology for assessing target to be determined. Reference level to be determined.
		Disturbance in roosting and feeding areas	Reduction or displacement of birds, measured periodically (frequency to be determined).	No significant displacement of birds attributable to human disturbance in relation to reference level.	All qualifing breeding and wintering annex 1 and migratory species. Methodology for assessing target to be determined. Reference level to be determined.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
All habitats: Grassland Improved, Swamp, Marginal and Inundation, Standing Water	Annex 1 species of European importance.	Food Availability	Abundance of live mammals and birds, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of food species year round in relation to reference level.	Small-medium sized mammals (voles, mice, rabbits) and birds (pipits to ducks) are important prey in the breeding season for marsh harriers and during the winter for hen harriers. Methodology for assessing target to be determined. Reference level to be determined.
Standing Water	Nationally important migratory species.	Food Availability	Presence and abundance of seed bearing plants, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of food species during the winter season in relation to reference level.	<i>Polygonum, Eleocharis, Rumex</i> and <i>Ranunculus</i> are important for Teal. Methodology for assessing target to be determined. Reference level to be determined.
Standing Water	Migratory species of national importance.	Food availability	Presence and abundance of aquatic invertebrates, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of prey species during the winter season in relation to reference level.	Hydrobia, flies, caddisfly, beetles and bugs are important for teal. Methodology for assessing target to be determined. Reference level to be determined.
Standing Water	Migratory species of national importance.	Water depth	Areas of shallow medium and deep water (feeding), measured periodically (frequency to be determined).	Water depths should not deviate significantly during the winter season.	Teal require a water depth of <30cm. Methodology for assessing target to be determined.



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pSPA: Breckland
cSAC: Breckland
Component SSSI: Cranwich Camp

Conservation objective for the European Interest on the SSSI

The conservation objectives for the European interests on the SSSI are :

to maintain*, in favourable condition, the:

- Semi-natural dry grasslands and scrubland facies: on calcareous substrates (*Festuco-Brometalia*)

to maintain*, in favourable condition, the habitats for the populations of the Annex 1 bird species⁺, of European importance, with particular reference to:

- heathland
- acid grassland
- chalk grassland and/or inland dune communities

⁺ Woodlark

* maintenance implies restoration if the feature is not currently in favourable condition.

The Conservation Objectives for Breckland proposed Special Protection Area and Breckland candidate Special Area of Conservation are, in accordance with para C 10 of PPG 9, the reasons for which the pSPA was proposed and the SAC designated .

The Breckland cSAC and the Breckland pSPA include land within:

Barnhamcross Common SSSI	Gooderstone Warren SSSI
Berner's Heath, Icklingham SSSI	Grime's Graves SSSI
Bridgham and Brettenham Heaths SSSI	Lakenheath Warren SSSI
Cavenham - Icklingham Heaths SSSI	Stanford Training Area SSSI
Cranwich Camp SSSI	Thetford Golf Course and Marsh SSSI
Deadman's Grave, Icklingham SSSI	Thetford Heath SSSI
East Wretham Heath SSSI	Wangford Warren and Carr SSSI
Field Barn Heaths, Hilborough SSSI	Weather and Horn Heaths SSSI
Foxhole Heath, Eriswell SSSI	Weeting Heath SSSI

The Breckland cSAC also includes land within:

Maidencross Hill SSSI	RAF Lakenheath SSSI
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The Breckland pSPA also includes land within

Barnham Heath SSSI	Little Heath, Barnham SSSI
Beeches Pit, West Stow SSSI	Old Bodney Camp SSSI
Cranberry Rough, Hockham SSSI	Rex Graham Reserve SSSI
Eriswell Low Warren SSSI	Warren Hill SSSI
High Lodge, Mildenhall SSSI	West Stow Heath SSSI
How Hill Track SSSI	

The Favourable Condition Table will be used by English Nature and other relevant authorities to determine if a site is in favourable condition. Favourable condition is achieved when the targets given below are met.

The favourable condition table should inform the scope and nature of any 'appropriate assessment' under the Habitats Regulations, but an appropriate assessment will also require consideration of issues specific to the individual plan or project. The favourable condition table does not by itself provide a comprehensive basis on which to assess plans and projects as required under Regulations 20-21, 24, 48-50 and 54 - 85. The scope and content of an appropriate assessment will depend upon the location, size and significance of the proposed project. English Nature will advise on a case by case basis.

Following an appropriate assessment, competent authorities are required to ascertain the effect on the integrity of the site. The integrity of the site is defined in para C10 of PPG9 as the coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified. The determination of favourable condition is separate from the judgement of effect upon integrity. For example, there may be a time-lag between a plan or project being initiated and a consequent adverse effect upon integrity becoming manifest in the condition assessment. In such cases, a plan or project may have an adverse effect upon integrity even though the site remains in favourable condition.

Annual counts for qualifying bird species will be used by English Nature, in the context of five year peak means, together with available information on UK population and distribution trends, to assess whether the SPA is continuing to make an appropriate contribution to the Favourable Conservation Status of the species across Europe.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Unimproved calcareous grassland	CG7b	*Extent	Total area (approx. 11ha), as mapped by Moore (1993), in period end April-mid July.	No reduction in area and any consequent fragmentation without prior consent	Recoverable reduction = unfavourable non-recoverable reduction = partially destroyed. Excludes bare ground associated with rabbit warrens (see below).
		*Sward composition: positive indicator species	Record the frequency of positive indicator species in period end April-mid July. <i>Aira</i> spp., <i>Aphanes</i> spp., <i>Astragalus danicus</i> , <i>Centaureum erythraea</i> , <i>Cladonia</i> spp , <i>Dianthus deltoides</i> , <i>Erigeron acer</i> , <i>Erodium cicutarium</i> , <i>Fragaria vesca</i> , <i>Galium verum</i> , <i>Helianthemum nummularium</i> , <i>Leontodon hispidus</i> /L. <i>saxatilis</i> , <i>Lotus corniculatus</i> , <i>Ornithopus perpusillus</i> , <i>Pilosella officinarum</i> (<i>Hieracium pilosella</i>), <i>Plantago coronopus</i> , <i>Rumex acetosella</i> , <i>Sedum acre</i> , <i>Teesdalia nudicaulis</i> , <i>Thymus</i> spp.	At least two species/taxa frequent and four species/taxa occasional throughout the sward	Choice of species related to NVC type and restriction to unimproved grassland considered satisfactory when inside target. Among possible species that could be used, choice further restricted by ease of identification, visibility in recording period.
		*Sward composition: negative indicator species	Record the frequency and % cover of negative indicator species. Record in period end April-mid July. <i>Carduus nutans</i> , <i>Chamerion angustifolium</i> , <i>Cirsium arvense</i> , <i>Cirsium vulgare</i> , <i>Plantago major</i> , <i>Urtica dioica</i> .	No species/taxa more than occasional throughout the sward or singly or together more than 5% cover	Invasive species chosen to indicate problems of eutrophication and disturbance from various sources whether outside target eg poaching, stock feed
		*Sward composition: negative indicator species	Record the frequency and % cover of all tree and scrub species excluding <i>Juniperus communis</i> , considered together, in period end April-mid July. NB If scrub/tree species are more than occasional throughout the sward but less than 5% cover, they are soon likely to become a problem if grazing levels are not sufficient or if scrub control is not being carried out.	No more than 5% cover.	Invasive species outside target shows habitat is not being managed sufficiently eg under-grazed.
		*Sward composition: negative indicator species	Record % cover of coarse grasses eg <i>Holcus lanatus</i> , <i>Dactylis glomerata</i> , in period end April-mid July.	No more than 10% cover	Invasive species chosen to indicate problems of eutrophication and insufficient removal of biomass eg under-grazing

		Sward composition: negative indicator species	Record frequency of <i>Senecio jacobaea</i> , in period end April-mid July.	No more than occasional throughout the sward	Frequency outside target indicates management problems eg over-grazing and trampling.
		Sward structure: average height	Record sward height in period end April-mid July.	Sward 5 cms or less	Outside target indicates insufficient grazing.
		Sward structure: litter	Record cover of litter where in a more or less continuous layer, distributed either in patches or in one larger area, in period end April-mid July.	Total extent no more than 25% of the sward	Outside target indicates biomass removal is insufficient eg under-grazed.
		Sward structure: bare ground	Record extent of bare ground (not rock) distributed through the sward, visible without disturbing the vegetation, in period end April-mid July.	No more than 15% .	Outside target indicates management problems eg over-grazing.
		Sward structure: localized bare ground	Record extent of localized bare ground around rabbit warrens.	No more than 0.25 ha ie approximately 50x50 metres	Heavy rabbit grazing usually associated with type but outside target indicates rabbit grazing and disturbance levels are too high.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
All habitats; heathland, acid grassland,	Annex 1 populations of European	Extent and distribution of habitat	Area, measured periodically (frequency to be determined)	No significant decrease from reference level.	Methodology for assessing target to be determined. Reference level to be determined.

chalk grassland and/or inland dune communities	importance: woodlark				
	Annex 1 populations of European importance: woodlark	Disturbance	Reduction or displacement of birds, measured periodically (frequency to be determined)	No significant reduction or displacement of birds attributable to human disturbance in relation to reference level.	Methodology for assessing target to be determined. Reference level to be determined.
	Annex 1 population of European importance: woodlark	Food availability	Abundance of ground-surface invertebrates, measured periodically (frequency to be determined).	Presence and abundance of prey species should not deviate from reference level.	Including e.g. spiders, weevils, caterpillars. Methodology for assessing target to be determined. Reference level to be determined.
	Annex 1 population of European importance: woodlark	Vegetation characteristics	Extent and proportions of mix of shrub / tree cover (display), short-medium vegetation and bare ground (feeding, roosting, nesting), measured periodically (frequency to be determined).	No significant decrease in extent and proportions of mix of shrub / tree cover (display), short-medium vegetation and bare ground (feeding, roosting, nesting).	Frequent bare patches under 0.5 ha within mosaic of short (under 5cm high) to medium (10-20cm high) ground vegetation, and small clumps of shrub trees. Methodology for assessing target to be determined. Reference level to be determined.

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pSPA: Breckland
Component SSSI: Cranberry Rough, Hockham

Conservation objective for the European Interest on the SSSI

The conservation objectives for the European interests on the SSSI are :

to maintain*, in favourable condition, the habitats for the populations of the Annex 1 species⁺, of European importance, with particular reference to

- heathland
- acid grassland
- chalk grassland and/or inland dune communities

⁺ Nightjar

* maintenance implies restoration if the feature is not currently in favourable condition.

The Conservation Objectives for Breckland proposed Special Protection Area are, in accordance with para C 10 of PPG 9, the reasons for which the SPA was classified.

The Breckland pSPA includes land within:

Barnhamcross Common SSSI	High Lodge, Mildenhall SSSI
Barnham Heath SSSI	How Hill Track SSSI
Beeches Pit, West Stow SSSI	Lakenheath Warren SSSI
Berner's Heath, Icklingham SSSI	Little Heath, BarnhamSSSI
Bridgham and Brettenham Heaths SSSI	Old Bodney Camp SSSI
Cavenham - Icklingham Heaths SSSI	Rex Graham Reserve SSSI
Cranwich Camp SSSI	Stanford Training Area SSSI
Cranberry Rough, Hockham SSSI	Thetford Golf Course and Marsh SSSI
Deadman's Grave, Icklingham SSSI	Thetford Heath SSSI
East Wretham Heath SSSI	Wangford Warren and Carr SSSI
Eriswell Low Warren SSSI	Warren Hill SSSI
Field Barn Heaths, Hilborough SSSI	Weather and Horn Heaths SSSI
Foxhole Heath, Eriswell SSSI	Weeting Heath SSSI
Gooderstone Warren SSSI	West Stow Heath SSSI
Grime's Graves SSSI	

The Favourable Condition Table will be used by English Nature and other relevant authorities to determine if a site is in favourable condition. Favourable condition is achieved when the targets given below are met.

The favourable condition table should inform the scope and nature of any 'appropriate assessment' under the Habitats Regulations, but an appropriate assessment will also require consideration of issues specific to the individual plan or project. The favourable condition table does not by itself provide a comprehensive basis on which to assess plans and projects as required under Regulations 20-21, 24, 48-50 and 54 - 85. The scope and content of an appropriate assessment will depend upon the location, size and significance of the proposed project. English Nature will advise on a case by case basis.

Following an appropriate assessment, competent authorities are required to ascertain the effect on the integrity of the site. The integrity of the site is defined in para C10 of PPG9 as the coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified. The determination of favourable condition is separate from the judgement of effect upon integrity. For example, there may be a time-lag between a plan or project being initiated and a consequent adverse effect upon integrity becoming manifest in the condition assessment. In such cases, a plan or project may have an adverse effect upon integrity even though the site remains in favourable condition.

Annual counts for qualifying bird species will be used by English Nature, in the context of five year peak means, together with available information on UK population and distribution trends, to assess whether the SPA is continuing to make an appropriate contribution to the Favourable Conservation Status of the species across Europe.

Operational feature	Criteria feature	Attribute	Measure	Target	Comment
All habitats; heathland, acid grassland, chalk grassland and/or inland dune communities	Annex 1 populations of European importance: nightjar	Extent and distribution of habitat	Area, measured periodically (frequency to be determined)	No significant decrease from reference level.	Methodology for assessing target to be determined. Reference level to be determined.
	Annex 1 populations of European importance: nightjar	Disturbance	Reduction or displacement of birds, measured periodically (frequency to be determined)	No significant reduction or displacement of birds attributable to human disturbance in relation to reference level.	Methodology for assessing target to be determined. Reference level to be determined.
	Annex 1 population of European importance: nightjar	Food availability	Abundance of night-flying insects, measured periodically (frequency to be determined).	Presence and abundance of prey species should not deviate significantly from reference level.	Moths and beetles are important for nightjar. Methodology for assessing target to be determined. Reference level to be determined.
	Annex 1 population of European importance: nightjar	Vegetation characteristics	open ground with low vegetation (feeding), and sparse woodland / scrub cover (feeding, roosting).	No significant decrease in extent and proportions of open ground with predominantly low vegetation (feeding), and sparse woodland / scrub cover (feeding, roosting) from reference level.	Nightjar require vegetation mostly 20-60cm high with less than 50% tree/scrub cover overall. Reference level to be determined.
	Annex 1 population of European importance: woodlark	Vegetation characteristics	Extent and proportions of mix of shrub / tree cover (display), short-medium vegetation and bare ground (feeding, roosting, nesting), measured periodically (frequency to be determined).	No significant decrease in extent and proportions of mix of shrub / tree cover (display), short-medium vegetation and bare ground (feeding, roosting, nesting).	frequent bare patches under 0.5 ha within mosaic of short (under 5cm high) to medium (10-20cm high) ground vegetation, and small clumps of shrubs or trees. Methodology for assessing target to be determined. Reference level to be determined.

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cSAC: Norfolk Valley Fens
Component SSSI: Coston Fen, Runhall

Conservation objective for the European Interest on the SSSI

The conservation objectives for the European interests on the SSSI are:

to maintain*, in favourable condition, the:

- Alkaline fens

* maintenance implies restoration if the feature is not currently in favourable condition.

The Conservation Objectives for Norfolk Valley Fens candidate Special Area of Conservation are, in accordance with para C10 of PPG 9, the reasons for which the cSAC was designated. The cSAC also includes land within Badley Moor, Dereham SSSI, Booton Common SSSI, Buxton Heath SSSI, East Walton and Adcock's Common SSSI, Flordon Common SSSI, Foulden Common SSSI, Great Cressingham Fen SSSI, Holt Lowes SSSI, Potter and Scarning Fens SSSI, Sheringham and Beeston Regis Common SSSI, Southrepps Common SSSI, Swangey Fen, Attleborough SSSI and Thompson Water, Carr and Common SSSI.

Favourable Condition Table for Coston Fen, Runhall SSSI

The favourable condition table will be used by English Nature to determine favourable condition and other relevant authorities to determine if a site is in favourable condition. Favourable condition is achieved when when the targets set out below are met.

The favourable condition table should inform the scope and nature of any ‘appropriate assessment’ under the Habitats Regulations, but an appropriate assessment will also require consideration of issues specific to the individual plan or project. The favourable condition table does not by itself provide a comprehensive basis on which to assess plans or projects as required under Regulations 20-21, 24, 48-50 and 54-85. The scope and content of an appropriate assessment will depend upon the location, size and significance of the proposed project. English Nature will advise on a case by case basis.

Following an appropriate assessment, competent authorities are required to ascertain the effect on the integrity of the site. The integrity of the site is defined in para. C10 of PPG9 as ‘the coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified. The determination of favourable condition is separate from the judgement of effect upon integrity. For example, there may be a time lag between a plan or project being initiated and a consequent adverse effect upon integrity being manifest in the condition assessment. In such cases, a plan or project may have an adverse effect upon integrity even though the site remains in favourable condition.

Operational	Criteria feature	Attributes	Measures	Targets	Comments
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feature					
Spring and seepage-fed chalk-rich alkaline valley fen	M13 black bog rush - blunt flowered rush <i>Schoenus nigricans</i> - <i>Juncus subnodulosus</i> fen.	Extent	Current extent	Maintain current extent as absolute minimum baseline.	Extent of fen communities may be subject to some natural dynamic variation, in response to extensive grazing pressure.
		Water quantity and quality	High piezometric head and permanently high water table (allowing for natural seasonal fluctuations) The spring water has low fertility and is rich in base ions.	Summer water levels (July-September) to fall no more than 10 cm below the surface.	
		Vegetation structure	Presence of varied sward structure with full range of vegetation heights, from close cropped to tall and ungrazed. Includes varying degrees of tussock height. Always includes elements of short pioneer fen vegetation	At height of summer (July August), fen vegetation to be typically no more than 0.5 metres tall, with random mosaic of differing vegetation and tussock heights across whole fen area.	As with extent, likely to be influenced by grazing regime, with vegetation responding to variable grazing pressure over time.
		Vegetation composition	Brown moss <i>Sphagnum spp.</i> carpets List A: <i>Schoenus nigricans</i> <i>Juncus subnodulosus</i> List B: <i>Pinguicula vulgaris</i> <i>Parnassia palustris</i> <i>Anagallis tenella</i> Orchid species	Low growing brown moss carpets to occupy between 5 and 15% of overall fen area. Both species in list A to be at least frequent. At least two species in list B to be at least occasional.	
Operational feature	Criteria feature	Attributes	Measures	Targets	Comments
		Negative indicators	<i>Phragmites australis</i> <i>Urtica dioica</i> <i>Salix cinerea</i> <i>Epilobium hirsutum</i> <i>Eupatorium cannabinum</i> <i>Fillipendula ulmaria</i>	Clumps of <i>Salix cinerea</i> to occupy no more than 5% of the overall fen area. All other species listed to be no more than rare in the overall M13 fen area.	



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pSPA: Breckland
cSAC: Breckland
Component SSSI: Cavenham-Icklingham Heaths

Conservation objective for the European Interest on the SSSI

The conservation objectives for the European interests on the SSSI are :

to maintain*, in favourable condition, the:

- European dry heaths
- Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion*, *Alno incanae*, *Salicion alvae*)

to maintain*, in favourable condition, the habitats for the populations of the Annex 1 species⁺, of European importance, with particular reference to:

- heathland
- acid grassland
- chalk grassland and/or inland dune communities

⁺ Woodlark, Nightjar, Stone Curlew

* maintenance implies restoration if the feature is not currently in favourable condition.

The Conservation Objectives for Breckland proposed Special Protection Area and Breckland candidate Special Area of Conservation are, in accordance with para C 10 of PPG 9, the reasons for which the pSPA was proposed and the SAC designated .

The Breckland cSAC and the Breckland pSPA include land within:

Barnhamcross Common SSSI	Gooderstone Warren SSSI
Berner's Heath, Icklingham SSSI	Grime's Graves SSSI
Bridgham and Brettenham Heaths SSSI	Lakenheath Warren SSSI
Cavenham - Icklingham Heaths SSSI	Stanford Training Area SSSI
Cranwich Camp SSSI	Thetford Golf Course and Marsh SSSI
Deadman's Grave, Icklingham SSSI	Thetford Heath SSSI
East Wretham Heath SSSI	Wangford Warren and Carr SSSI
Field Barn Heaths, Hilborough SSSI	Weather and Horn Heaths SSSI
Foxhole Heath, Eriswell SSSI	Weeting Heath SSSI

The Breckland cSAC also includes land within:

Maidencross Hill SSSI	RAF Lakenheath SSSI
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The Breckland pSPA also includes land within

Barnham Heath SSSI	Little Heath, Barnham SSSI
Beeches Pit, West Stow SSSI	Old Bodney Camp SSSI
Cranberry Rough, Hockham SSSI	Rex Graham Reserve SSSI
Eriswell Low Warren SSSI	Warren Hill SSSI
High Lodge, Mildenhall SSSI	West Stow Heath SSSI
How Hill Track SSSI	

The Favourable Condition Table will be used by English Nature and other relevant authorities to determine if a site is in favourable condition. Favourable condition is achieved when the targets given below are met.

The favourable condition table should inform the scope and nature of any 'appropriate assessment' under the Habitats Regulations, but an appropriate assessment will also require consideration of issues specific to the individual plan or project. The favourable condition table does not by itself provide a comprehensive basis on which to assess plans and projects as required under Regulations 20-21, 24, 48-50 and 54 - 85. The scope and content of an appropriate assessment will depend upon the location, size and significance of the proposed project. English Nature will advise on a case by case basis.

Following an appropriate assessment, competent authorities are required to ascertain the effect on the integrity of the site. The integrity of the site is defined in para C10 of PPG9 as the coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified. The determination of favourable condition is separate from the judgement of effect upon integrity. For example, there may be a time-lag between a plan or project being initiated and a consequent adverse effect upon integrity becoming manifest in the condition assessment. In such cases, a plan or project may have an adverse effect upon integrity even though the site remains in favourable condition.

Annual counts for qualifying bird species will be used by English Nature, in the context of five year peak means, together with available information on UK population and distribution trends, to assess whether the SPA is continuing to make an appropriate contribution to the Favourable Conservation Status of the species across Europe.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Dry heathland	H1	Extent	Total area (ha) mapped in relation to a site specific baseline to be determined (ie. first available map/aerial photograph of interest feature when/after notified). There is approx. 20ha on Cavenham Heath NNR cmpt4. Measure every two years if it is possible. [In specific cases see if there is a radical difference between cSAC and SSSI baseline, in which case discuss with specialist.]	Maintain existing area and extent	This community is confined to base-poor and oligotrophic sandy soils in the more continent lowlands of Eastern England. Large areas have been lost or fragmented to agriculture and forestry in the past.
		Bare ground	'Natural' bare ground (mineral soil) in intimate mosaic within vegetation 'Recreation' heavily used paralleling paths	'Natural' between 10-25% 'Heavily disturbed' <1%	Bryophytes and lichens are more extensive and diverse amongst open cover of <i>Calluna</i> . [Sandy profiles can be found in coastal and inland dune systems, where there is, or has been mobile sand.]
		Vegetation Structure	Record percentage of cover of <i>Calluna vulgaris</i> in different stages of its life cycle.	Cover of <i>Calluna vulgaris</i> to be between 25% minimum and 90% maximum. Mosaic with >10% young and 30-50% mature / degenerate <i>Calluna vulgaris</i> within unit. < 25% <i>Ulex europaeus</i>	<i>Calluna vulgaris</i> is often the only woody species present. Its cover and height are very variable. Grasses, when they occur, are present as scattered tussocks. <i>Ulex europaeus</i> is uncommon and restricted to disturbed areas.
		Vegetation Composition	Record frequency of any of the following species when present: List A <i>Calluna vulgaris</i> List B <i>Agrostis capillaris</i> , <i>Festuca ovina</i> , <i>Deschampsia flexuosa</i>	All species from List A must be at least frequent. At least two species of list B are at least occasional	Associated flora is for the most part confined to areas between <i>Calluna</i> clumps and the centre of collapsing bushes.
		Negative indicators	Record frequency and percentage cover of any of the following species when present: <i>Pteridium aquilinum</i> <i>Rhododendron ponticum</i> <i>Rubus</i> spp. <i>Senecio</i> spp.	< 50 % cover degenerate/dead <i>Calluna vulgaris</i> No <i>Rhododendron ponticum</i> < 1 % <i>Rubus</i> spp., <i>Senecio</i> spp., <i>Urtica dioica</i> , <i>Cirsium</i> spp.	<i>Rhododendron ponticum</i> and <i>Gaultheria shallon</i> can spread rapidly and have a negligible natural conservation value. Dense rhododendron casts deep shade which excludes other vegetation. Scrub (shrubs, trees or tree seedlings) above 1m in height is an important component of the heathland but its cover should be stable or not

			<i>Urtica dioica</i> <i>Pinus</i> spp. <i>Betula</i> spp. <i>Quercus</i> spp. <i>Cirsium arvense</i> <i>Cirsium vulgare</i> <i>Deschampsia flexuosa</i>	< 5% trees, tree seedlings or other species of scrub. < 25% <i>Pteridium aquilinum</i> < 25% <i>Deschampsia flexuosa</i>	increasing as a whole. Management of bracken should be directed more to control than eradication.
			Record presence of signs of overgrazing, e.g. carpet, topiary or drumstick heather forms	No presence of signs of overgrazing.	Although lowland heathlands tend to be more under-grazed than over-grazed, localized overgrazing may occur. Management may need to be modified to tackle these situations.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Semi-natural	Residual	1. Area	Extent/location of stands	At least current total area of	A high proportion of this type of woodland m

woodland	alluvial woodland (mainly parts of NVC types W2,5,6,7)			recent semi-natural stand 5.82ha, 14.386 acres) maintained, as mapped by Ordnance Survey 2nd edn map 1904	be recent and hence a dynamic interchange with open wet communities may occur. Stand destruction may occur if the understorey and ground flora are irretrievably damaged even if the canopy remains intact. Area and location of stands may be assessed remotely or by site visit.
		2. Natural processes and structural development	Age/size class variation within and between stands; presence of open space and old trees; dead wood lying on the ground; standing dead trees	<p>At least the current level of structural diversity maintained.</p> <p>Understorey (2-5m) present over at least 20% of total stand area</p> <p>Ground flora present over at least 50% of area excluding temporary pool areas</p> <p>Canopy cover present over 30-90 % of stand area</p> <p>Age class structure (predominantly 50-60 year old coppice) to be allowed to develop naturally without intervention.</p>	<p>Any changes leading to exceedance of these limits due to natural processes are likely to be acceptable.</p> <p>There is generally a good structural variety in these stands although veteran trees may be under-represented because of past treatment and the unstable nature of some sites.</p> <p>The ground flora may appear sparse, particularly where periodic flooding leaves areas of bare mud etc. Its composition may be variable (see attribute 5).</p> <p>In coppiced stands a lower canopy cover (of standards) can be accepted.</p> <p>Dead wood is often abundant but because there</p>

				A minimum of 3 fallen lying trees or major branches per ha and 4 trees per ha allowed to die standing.	tend to be fewer big trees the size of the fallen wood is often small. Flooding may lead to local accumulations with other areas totally lacking fallen wood.
		2. Natural processes and structural development	Structures associated with the hydrological regime also need to be considered.	At least the current level of natural hydrological features should be maintained (seepage from river and from springs). Restore natural geomorphological functioning of floodplain (remove existing flood bank, no constraint upon channel movement or water flow, near-natural flooding regime, water quality not significantly altered by riparian and catchment land-use)	Where possible the hydrological regime should be allowed to revert to a more natural state. Water table should be maintained at close to the soil surface permanently and flooding should take place at least annually.
		3. Regeneration potential	Successful establishment of young stems in gaps or on the edge of a stand	Signs of seedlings growing through to saplings to young trees at sufficient density to maintain canopy density over a 10 yr period No planting of trees	A proportion of gaps at any one time may develop into permanent open space; equally some current permanent open space/glades may in time regenerate to closed canopy. Regeneration may often occur on the edges of stands rather than in gaps within it. Assess this attribute by walking through the wood in spring/summer.
		4. Composition	Cover of native versus non-native species	At least the current level of	

			<p>(all layers)</p> <p>Death, destruction or replacement of native woodland species through effects of non-native fauna or external unnatural factors</p>	<p>site-native species maintained.</p> <p>At least 90% of cover in any one layer of site-native or acceptable naturalised species.</p> <p>Death, destruction or replacement of native woodland species through effects of introduced fauna or other external unnatural factors - not more than 10% by number or area in a five year period.</p>	<p>Where cover in any one layer is less than 100% then the 90% target applies to the area actually covered by that layer.</p> <p>[Factors leading to the death or replacement of woodland species could include pollution, including eutrophication from adjacent farmland, new diseases (eg alder dieback).]</p> <p>Excessive browsing/grazing by even native ungulates (e.g. deer) may be considered an unnatural external factor where it leads to undesirable shifts in the composition or structure of the stand, although this may be picked up by attributes 2 or 5 anyway.</p>
		<p>5. Species, habitats, structures characteristic of the site.</p>	<p>Ground flora type</p> <p>Patches of associated habitats and transitions eg to ash wood or to open fen,</p>	<p>80% of ground flora cover referable to relevant NVC wet woodland community W6</p> <p>Transitions to reed swamp and to breckland grassland</p>	<p>Changes leading to these targets not being met may be acceptable where this is due to natural processes.</p> <p>Transitions should be marked on maps for ease</p>

			shingle banks and open water	maintained in extent and where appropriate location.	of checking in the field wherever possible.
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Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
All habitats; heathland, acid grassland, chalk grassland and/or inland dune communities	Annex 1 populations of European importance: stone-curlew, nightjar, woodlark	Extent and distribution of habitat	Area, measured periodically (frequency to be determined)	No significant decrease from reference level.	Methodology for assessing target to be determined. Reference level to be determined
	Annex 1 populations of European importance: stone-curlew, nightjar, woodlark	Disturbance	Reduction or displacement of birds, measured periodically (frequency to be determined)	No significant reduction or displacement of birds attributable to human disturbance in relation to reference level.	Methodology for assessing target to be determined. Reference level to be determined
	Annex 1 population of European importance: stone-curlew	Food availability -	Abundance of soil and dung invertebrates, measured periodically (frequency to be determined)	Presence and abundance of prey species should not deviate significantly from reference level	Including e.g. beetles, grasshoppers, flies, earthworms, snails, slugs. Methodology for assessing target to be determined. Reference level to be determined

	Annex 1 population of European importance: nightjar	Food availability	Abundance of night-flying insects, measured periodically (frequency to be determined).	Presence and abundance of prey species should not deviate significantly from reference level.	Moths and beetles are important for nightjar. Methodology for assessing target to be determined. Reference level to be determined
	Annex 1 population of European importance: woodlark	Food availability	Abundance of ground-surface invertebrates, measured periodically (frequency to be determined).	Presence and abundance of prey species should not deviate from reference level.	Including e.g. spiders, weevils, caterpillars. Methodology for assessing target to be determined. Reference level to be determined
	Annex 1 population of European importance: stone-curlew	Vegetation characteristics	Extent and proportions of patches of at least half-hectare with vegetation less than 2cm high and at least 10% bare ground and unrestricted views over 200m, patches of medium height vegetation for roosting, measured periodically (frequency to be determined).	No significant decrease in extent and proportions of patches of at least half-hectare with vegetation less than 2cm high and at least 10% bare ground and unrestricted views over 200m, patches of medium height vegetation for roosting, measured periodically; from reference level.	Methodology for assessing target to be determined. Reference level to be determined
	Annex 1 population of European importance: nightjar	Vegetation characteristics	Extent and proportions of open ground with predominantly low vegetation (feeding), bare patches (nesting), and sparse woodland / scrub cover (feeding, roosting) measured periodically (frequency to be determined).	No significant decrease in extent and proportions of open ground with predominantly low vegetation (feeding), bare patches (nesting), and sparse woodland / scrub cover	Nightjar require vegetation mostly of 20-60cm with frequent bare patches greater than 2m ² , 10-20% bare ground (nesting) and less than 50% tree/scrub cover overall Reference level to be determined

				(feeding, roosting) from reference level.	
	Annex 1 population of European importance: woodlark	Vegetation characteristics	Extent and proportions of mix of shrub / tree cover (display), short-medium vegetation and bare ground (feeding, roosting, nesting), measured periodically (frequency to be determined).	No significant decrease in extent and proportions of mix of shrub / tree cover (display), short-medium vegetation and bare ground (feeding, roosting, nesting).	Frequent bare patches under 0.5 ha within mosaic of short (under 5cm high) to medium (10-20cm high) ground vegetation, and small clumps of shrubs or trees. Methodology for assessing target to be determined. Reference level to be determined

SLR/NS



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cSAC: The Broads
SPA: Broadland
Component SSSI: Cantley Marshes

Conservation objectives for the European Interest on the SSSI

The conservation objectives for the European interest on the SSSI are:

to maintain*, in favourable condition, the:

- Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior*.
- Natural eutrophic lakes with *Magnopotamion* or *Hydrocharition*-type vegetation.
- *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*).

to maintain*, in favourable condition, the habitats for the population of:

- Desmoulin's whorl snail (*Vertigo moulinsiana*).
- Otter (*Lutra lutra*).

to maintain*, in favourable condition, the habitats for the populations of Annex1 bird species⁺ of European importance with particular reference to:

- fen
- lowland wet grassland with ditches and water bodies.

+Marsh harrier, Hen harrier and Ruff.

to maintain*, in favourable condition, the habitats for the populations of migratory bird species⁺ of European importance with particular reference to:

- fen
- lowland wet grassland with ditches and water bodies.

+Gadwall and Shoveler.

to maintain*, in favourable condition, the habitats of the populations of waterfowl that contribute to the wintering waterfowl assemblage of the Broadland SPA with particular reference to,

- fen and lowland wet grassland with ditches and water bodies.

* maintenance implies restoration if the feature is not currently in favourable condition.

The Conservation Objectives for The Broads candidate Special Area of Conservation and Broadland Special Protection Area are, in accordance with para C 10 of PPG 9, the reasons for which the cSAC was designated and the SPA classified. The entry of 30 January 1996 on the Register of European Sites gives the reasons for which the SPA was classified.

The **Broads cSAC** and **Broadland SPA** includes land within: Alderfen Broad SSSI, Ant Broads and Marshes SSSI, Barnby Broad and Marshes SSSI, Broad Fen, Dilham SSSI, Bure Broads and Marshes SSSI, Burgh Common and Muckfleet Marshes SSSI, Calthorpe Broad SSSI, Cantley Marshes SSSI, Crostwick Marsh SSSI, Decoy Carr, Acle SSSI, Ducan's Marsh, Claxton SSSI, Geldeston Meadows SSSI, Hall Farm Fen, Hemsby SSSI, Halvergate Marshes SSSI, Hardley Flood SSSI, Limpenhoe Meadows SSSI, Ludham-Potter Heigham Marshes SSSI, Poplar Farm Meadows, Langley SSSI, Priory Meadows, Hickling SSSI, Shallam Dyke Marshes, Thurne SSSI, Smallburgh Fen SSSI, Sprat's Water and Marshes, Carlton Colville SSSI, Stanley and Alder Carrs, Aldeby SSSI, Upper Thurne Broads and Marshes SSSI, Upton Broads and Marshes SSSI and Yare Broads and Marshes SSSI.

The **Broads cSAC** additionally includes land within: Damgate Marshes, Acle SSSI and Trinity Broads SSSI.

Favourable Condition Table for Cantley Marshes SSSI

The Favourable Condition Table will be used by English Nature and other relevant authorities to determine if a site is in favourable condition. Favourable condition is achieved when the targets given below are met.

The favourable condition table should inform the scope and nature of any 'appropriate assessment' under the Habitats Regulations, but an appropriate assessment will also require consideration of issues specific to the individual plan or project. The favourable condition table does not by itself provide a comprehensive basis on which to assess plans and projects as required under Regulations 20-21, 24, 48-50 and 54 - 85. The scope and content of an appropriate assessment will depend upon the location, size and significance of the proposed project. English Nature will advise on a case by case basis.

Following an appropriate assessment, competent authorities are required to ascertain the effect on the integrity of the site. The integrity of the site is defined in para C10 of PPG9 as the coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified. The determination of favourable condition is separate from the judgement of effect upon integrity. For example, there may be a time-lag between a plan or project being initiated and a consequent adverse effect upon integrity becoming manifest in the condition assessment. In such cases, a plan or project may have an adverse effect upon integrity even though the site remains in favourable condition.

Annual counts for qualifying bird species will be used by English Nature, in the context of five year peak means, together with available information on UK population and distribution trends, to assess whether the SPA is continuing to make an appropriate contribution to the Favourable Conservation Status of the species across Europe.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Molinia meadows on calcareous, peaty or clayey-silt-laden soils (<i>Molinion caeruleae</i>) Unimproved marshy grassland	NVC type M24	Extent	Total area (ha), mapped in relation to a site-specific reference level to be determined, in period early June - end of August.	No reduction in area and any consequent fragmentation without prior consent	Recoverable reduction = unfavourable; non-recoverable reduction = partially destroyed. Temporary reductions related to natural variation in hydrological conditions should be noted as such where information allows.
		Sward composition: positive indicator species	Record the frequency of positive indicator species from the list below to give an overall total of 2 frequent and 3 occasional. Record in period early June - end of August. <i>Anagallis tenella, Angelica sylvestris, Cirsium dissectum, Erica tetralix, Eupatorium cannabinum, Filipendula ulmaria, Galium uliginosum/ Galium palustre, Orchidaceae spp., Pedicularis sylvatica, Potentilla erecta, small blue-green Carex spp. (leaves less than 5mm wide) (C. flacca, C.nigra, C.panicea), Sphagnum spp., Succisa pratensis, Valeriana dioica, Valeriana officinalis, Viola palustris.</i>	Overall total of at least two species/taxa frequent plus at least three species/taxa occasional throughout the sward.	Choice of species related to NVC types, restriction to unimproved grassland and wetness characteristics of habitat, all satisfactory when inside target. Among possible species that could be used, choice further restricted by ease of identification, visibility in recording period.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		Sward composition: frequency and cover of <i>Molinia caerulea</i>	Record the frequency and % cover of <i>Molinia caerulea</i> . Record in period early June - end of August.	At least frequent throughout the sward but no more than 80% cover	<i>Molinia</i> is a characteristic component of the community and should thus be at least frequent. However, increasing cover exceeding upper target is indicative of insufficient management by grazing or cutting.
		Sward composition: negative indicator species	Record the frequency and % cover of negative indicator species. Record in period early June- end of August. <i>Cirsium arvense, Cirsium vulgare, Rumex crispus, Rumex obtusifolius, Urtica dioica.</i>	No species more than occasional throughout the sward or singly or together more than 5% cover	Invasive species chosen to indicate problems of eutrophication and disturbance from various sources when outside target eg poaching, stock feeding.
		Sward composition: cover of <i>Juncus</i> spp	Record the % cover of <i>Juncus</i> species from groups A and B. Record in period early June - end of August. Group A: jointed rushes (<i>Juncus acutiflorus, J. articulatus, J. subnodulosus</i>) Group B: <i>Juncus conglomeratus, J. effusus and J. inflexus.</i>	All species combined no more than 80% cover, of which no more than 50% made up of spp. from Group B	<i>Juncus</i> spp can be characteristic components of the communities. However, increasing cover is indicative of insufficient management by grazing or cutting and/or waterlogging. Group B species may indicate problems of eutrophication from various sources when outside target eg stock feeding, fertiliser use.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		*Sward composition: negative indicator species.	Record the % cover of negative indicator species. Record in period early June - end of August. <i>Cirsium palustre.</i>	No more than 20% cover.	This species may be indicative of disturbance from various sources when outside target eg poaching, stock feeding.
		*Sward composition: negative indicator species.	Record the % cover of negative indicator species. Record in period early June - end of August. <i>Deschampsia cespitosa</i>	No more than 10% cover.	Increasing cover of <i>Deschampsia cespitosa</i> outside target may be indicative of insufficient management by grazing or cutting, overgrazing, disturbance by excessive poaching or altered hydrology eg reduced water movement in the soil profile during the year resulting in anaerobic conditions. Increasing cover may lead to reduced species richness in the community.
		*Sward composition: negative indicator species	Record the % cover or frequency of negative indicator species in period early June - end of August. All tree and scrub species excluding <i>Salix repens</i> and <i>Myrica gale</i> , considered together. NB If scrub/tree species in pastures are more than occasional throughout the sward but less than 5% cover, they are soon likely to become a problem if grazing levels are not sufficient or if scrub control is not being carried out.	No more than 5% cover.	Invasive species outside target shows that habitat is not being managed sufficiently eg lack of or insufficient grazing/cutting

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		*Sward composition: % cover of <i>Phragmites australis</i>	Record the % cover of <i>Phragmites australis</i> in period early June-end of August.	No more than 10% cover.	Increasing cover of <i>Phragmites australis</i> outside target may be indicative of insufficient management by grazing or cutting. Lack of management may ultimately convert the community to tall-fen in some geographical areas.
		Sward composition: % cover of <i>Myrica gale</i> .	Record the % cover of <i>Myrica gale</i> in period early June - end of August.	No more than 10% cover	If <i>Myrica</i> cover outside target this shows that habitat is not being managed sufficiently eg lack of or insufficient grazing/cutting
		Sward composition: negative indicator species.	Record the frequency and % cover of negative indicator species. Record in period early June - end of August. <i>Senecio aquaticus</i>	No more than occasional throughout the sward or more than 5% cover	Outside target can discourage hay/grazing management because the species is toxic to livestock, and is palatable when dry.
		Sward structure: average height	Record sward height in period early June - end of August. (Upper target refers to pastures only.)	M24a Sward 5 cm or greater (excluding <i>Juncus</i> spp.) but no more than 25% over 60 cm M24b, M24c Sward 2 cm or greater (excluding <i>Juncus</i> spp.) but no more than 25% over 15 cm	Sward height above upper target shows that habitat is not being managed sufficiently eg lack of or insufficient grazing or if below lower target, is being overgrazed.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		Sward structure: litter	Record cover of litter where in a more or less continuous layer, distributed either in patches or in one larger area. Record in period early June - end of August for pastures.	Total extent no more than 25% of the sward	Outside target indicates biomass removal is insufficient eg lack of or insufficient grazing or not cut for hay.
		Sward structure: bare ground	Record extent of bare ground distributed through the sward, visible without disturbing the vegetation. Record in period early June - end of August.	No more than 10%	Outside target indicates problems with stock management eg poaching, supplementary feeding.
Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i>, <i>Alnion incanae</i>, <i>Salicion alvae</i>) Semi-natural woodland	Parts of NVC types W2 and W5, 6 and 7)	Extent	Extent/location of stands	No loss of ancient semi-natural stands At least current area of recent semi-natural stands maintained, although their location may alter. At least the area of ancient woodland retained	* Stand loss due to natural processes eg in minimum intervention stands may be acceptable. * A high proportion of this type of woodland may be recent and hence a dynamic interchange with open wet communities may occur. * Stand destruction may occur if the understorey and ground flora are irretrievably damaged even if the canopy remains intact. * Loss = 0.5 ha or 0.5% of the stand area, whichever is the smaller. * 20% canopy cover is conventionally taken as the lower limit for an area to be considered as woodland. Stands of willow scrub may pose difficulties of definition. * Area and location of stands may be assessed remotely or by site visit.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		2. Natural processes and structural development	Age/size class variation within and between stands; presence of open space and old trees; dead wood lying on the ground; standing dead trees Structures associated with the hydrological regime also need to be considered.	<ul style="list-style-type: none"> * At least the current level of structural diversity maintained. * Understorey (2-5m) present over at least 20% of total stand area * Ground flora present over at least 50% of area excluding temporary pool areas * Canopy cover present over 30-90 % of stand area * Age class structure appropriate to the site, its history and management. * A minimum of 3 fallen lying trees or major branches per ha and 4 trees per ha allowed to die standing. * At least the current level of natural hydrological features should be maintained (channels, pools, periodic flooding) 	<ul style="list-style-type: none"> * Any changes leading to exceedance of these limits due to natural processes are likely to be acceptable. * There is generally a good structural variety in these stands although veteran trees may be under-represented because of past treatment and the unstable nature of some sites. * The ground flora may appear sparse, particularly where periodic flooding leaves areas of bare mud etc. Its composition may be variable (see attribute 5). * In coppiced stands a lower canopy cover (of standards) can be accepted. * See JNCC guidance note for the sorts of age structure likely to be appropriate for different types of management regime. * Dead wood is often abundant but because there tend to be fewer big trees the size of the fallen wood is often small. Flooding may lead to local accumulations with other areas totally lacking fallen wood. * Assess this attribute by field survey. * Where possible the hydrological regime should be allowed to revert to a more natural state.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		3.Regeneration potential	Successful establishment of young stems in gaps or on the edge of a stand	<ul style="list-style-type: none"> * Signs of seedlings growing through to saplings to young trees at sufficient density to maintain canopy density over a 10 yr period (or equivalent regrowth from coppice stumps). * No planting in stands. 	<ul style="list-style-type: none"> * A proportion of gaps at any one time may develop into permanent open space; equally some current permanent open space/glades may in time regenerate to closed canopy. * Regeneration may often occur on the edges of stands rather than in gaps within it. * In coppice most of the regeneration will be as stump regrowth. See JNCC Guidance Note on likely desirable levels of regeneration. * The minimum level of regeneration to be acceptable from a nature conservation viewpoint is likely to be much less than that needed where wood production is also an objective. * Assess this attribute by walking through the wood in spring/summer.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		4. Composition	Cover of native versus non-native species (all layers) Death, destruction or replacement of native woodland species through effects of non-native fauna or external unnatural factors	* At least the current level of site-native species maintained. * At least 90% of cover in any one layer of site-native or acceptable naturalised species. * Death, destruction or replacement of native woodland species through effects of introduced fauna or other external unnatural factors not more than 10% by number or area in a five year period.	* In sites where there might be uncertainty as to what counts as site-native or as an acceptable naturalised species this must be made clear (eg the position of poplar). * Where cover in any one layer is less than 100% then the 90% target applies to the area actually covered by that layer. * Factors leading to the death or replacement of woodland species could include pollution, including eutrophication from adjacent farmland; new diseases (eg alder dieback). * Damage to species by non-native species that does not lead to their death or replacement by non woodland species (eg damage from squirrels to trees that non-the -less survive) is not necessarily unacceptable in nature conservation terms. * Excessive browsing/grazing by even native ungulates may be considered an unnatural external factor where it leads to undesirable shifts in the composition/structure of the stand, although this may be picked up by attributes 2 or 5 anyway. * Assess this attribute by a walk through the site.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		5. Species, habitats, structures characteristic of the site.	Ground flora type Distinctive and desirable elements for a given site eg. locally uncommon species such as <i>Carex elata</i> ; veteran trees or rich invertebrate assemblages. Patches of associated habitats and transitions eg to ash wood, open fen and open water	* 80% of ground flora cover referable to relevant NVC wet woodland community (W 2, 5, 6 and 7) * Distinctive elements maintained at current levels and in current locations (where appropriate). * Patches and transitions maintained in extent and where appropriate location.	* Changes leading to these targets not being met may be acceptable where this is due to natural processes. * Distinctive elements and patches should be marked on maps for ease of checking in the field wherever possible. * If there are species groups/assemblages that cannot be assessed directly on a general site visit then surrogate features should be given where possible, eg dead wood concentrations for associated invertebrates.
22.13 Natural eutrophic lakes with Magnopotamion or Hydrocharition type vegetation.	NVC types: A3 A9 A13 A4 Types '7', '8', '9' and '10' of the GB Standing Water Classification.	Extent of community.	Check extent of beds in July/August every 4 years.	Extensive beds of submerged macrophytes should be present. Maintain mixed community.	Submerged vegetation characterised by broad leaved <i>Potamogeton</i> species such as <i>Potamogeton perfoliatus</i> , <i>P lucens</i> , <i>P crispus</i> , <i>P natans</i> , <i>P x salicifolius</i> , <i>P coloratus</i> , <i>P polygonifolius</i> , <i>P gramineus</i> , <i>P. alpinus</i> and <i>Hydrocharition</i> type vegetation. <i>Hydrocharis morsus-ranae</i> is a very rare associate with the <i>Magnopotamion</i> in the UK. Its community components are present, however, mainly <i>Spirodela polyrhiza</i> , <i>Lemna minor</i> , <i>Hippuris vulgaris</i> , <i>Utricularia vulgaris</i> and <i>Apium inundatum</i> . Community should be mixed and no one species should be present above 40% level of total amount of macrophyte presence.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Standing water-ditch system		Extent of <i>Potamogeton</i> species <i>Magnopotamion</i> .	Check species presence in July/August every 4 years.	Maintain species presence of all <i>Magnopotamion</i> and fine leaved <i>Potamogetons</i> .	No one <i>Potamogeton</i> species should be present above 40% level of total amount or level of macrophyte presence (see Water Quality comment).
		Extent of nationally scarce or threatened species.	Establish population size and position of nationally scarce, rare or threatened species over a period of 3 years, on a quarterly basis; thereafter every two years in July/August.	Maintain presence of all nationally scarce, rare or threatened plant species.	Nationally scarce, rare or threatened species can vary in population size and extent due to temporal/seasonal changes in climate which affects physical variables such as water temperature.
		Water quality	Arrange for analysis of quarterly measurements of Total P for first three years; thereafter annually in July/August.	Maintain water quality particularly Total P levels. For southern systems 100 $\mu\text{g l}^{-1}$ or below, down to 65 $\mu\text{g l}^{-1}$.	The variable targets for Total P reflects the geographical range of this trophic state. The target for Total P should be set for individual SAC's and an acceptable range established. Increases in Total P suggest a need to move from annual July/August check, back to more intensive quarterly samples to verify whether change is real. Also check for cover shifts of macrophytes and dominant presence of pollution tolerant species above 40% level such as <i>Potamogeton pectinatus</i> , <i>Myriophyllum spicatum</i> and/or <i>Ceratophyllum demersum</i> .
		Water quantity	Check ditch levels during July/August.	Maintain hydrology of ditch system.	Hydrology involves not only ditch levels but flushing rates; prevent lowering or raising of ditch level through modification of outfalls. With ditch systems aim for constant high water table throughout the year Water abstraction may represent a significant issue through the reduction of ground water and flushing flows into marginal ditch systems.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		Sediment	Check for excessive growths of individual macrophytes ie above 40%.	Maintain sediment quality and quantity.	Effects of increased macrophyte growth also relates to water quality; if this is at target levels, then enrichment of sediments is an issue if broad leaved <i>Potamogeton</i> species decline and fine leaved <i>Potamogeton pectinatus</i> increases above 40% level or <i>Myriophyllum spicatum</i> / <i>Ceratophyllum demersum</i> become dominant. Introduced fish and recreational use of site might through sediment disturbance move sites out of favourable condition. Check for increases in siltation from catchment use changes or changes in sewage treatment.
River wet woodland fen	Otter <i>Lutra lutra</i>	Water quality	EA scale	"Good", with no pollution incidents	Refer to Environment Agency for data
		Flow rate	Mean annual flow rate	No reduction attributable to increased abstraction.	Data from Environment Agency
		Site integrity	Total area	No reduction of fragmentation of area	
		Fish stocks	EA assessment	Fish stocks appropriate to the nutrient status of the river No significant decline in fish biomass or species diversity	Refer to Environment Agency for sample data
		Disturbance	Extent of public access to river	No significant change to river or bankside usage; no significant development	
		Bankside cover	Proportion of bank lined with trees, scrub or other thick cover	No overall permanent decrease	Some change acceptable as long as it is appropriately mitigated
		Presence of otters	Signs of otters	Signs of otters found at least once per year	Use data from national or county surveys

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Rivers fens	Desmoulins whorl snail <i>Vertigo moulinsiana</i>	structure and composition of marginal vegetation	Length or area of stand of appropriate vegetation	The extent of suitable habitat should be maintained, compared to the extent on a baseline map, over appropriate lengths of river or area of fen or pool margin [length of river or area of fen or swamp, and number of sample stretches to be decided locally]. Suitable vegetation will be dense, unbroken stands of <i>Glyceria maxima</i> , <i>Carex riparia</i> , <i>C. acutiformis</i> , <i>C. paniculata</i> , <i>Cladium mariscus</i> and/or sparse <i>Phragmites</i> and <i>Phalaris arundinacea</i> .	It is expected that traditional and accepted river management will cause local deterioration of some stands but the aim is to ensure that habitat in appropriate condition is present at frequent intervals along a river corridor. The snail appears to be able to colonise new adjacent stands rapidly, and closely spaced, fragmented patches may provide acceptable conditions for this species. Habitat should be a suitable size and linked to rivers and waterways hydrologically and not separated by barriers such as mown paths.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Rivers fens		water table	1. depth below ground level; 2 & 3. vegetation indicators of drying out.	1. Water table must be close to the surface so that the ground remains squelchy all year, i.e. never drying out, so that, even in high summer, water will rise when the soil is trodden. Winter flooding is permissible. 2. Not more than 10% (occasional on the DAFOR scale) replacement of preferred dominant species by dense tall reed or by plants of drier conditions, e.g. <i>Urtica dioica</i> , <i>Epilobium hirsutum</i> , and low grasses invading the litter layer, within pre-selected stands (as selected for	<i>V. mouliniana</i> requires highly humid conditions which are met by a high water table below the stands of vegetation in which it lives. Unfavourably wet conditions can result from prolonged flooding in summer or water penning being set too high. Current research (2000-01) will refine acceptable limits and measures for soil moisture. measuring extent). 3. Not more than 10% (occasional on the DAFOR scale) replacement of tall monocotyledons by plants preferring wetter conditions, e.g. <i>Rorippa nasturtium-aquaticum</i> , <i>Apium nodiflorum</i> and <i>Berula erecta</i> .
Rivers fens		vegetation height	height of bulk of the vegetation	Average height of the stands no less than 50 cm.	<i>V. mouliniana</i> requires tall leaves on which it lives almost of the year. Heavy grazing and mowing may be detrimental if it removes most taller clumps.
Rivers fens		shading by shrubs and trees (e.g. willow, alder)	proportion of habitat	Less than 10% increase in area of shade, compared to extent on the baseline map.	

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
rivers fens		water quality	Biological class - Environment Agency's General Quality Assessment scheme. Assess every 5 years River Ecosystem Class. Assess against Environment Agency monitoring results. Suspended solids	>='b' In addition, no drop in class from exiting situation. >= RE3 In addition, no drop in class from exiting situation.	Although the snail lives out of the water, water quality may influence vegetation structure and perhaps the microflora living on the leaf surfaces where the snail feeds, and chemical quality may directly affect the snail when it is submerged during floods. Future experience and research may indicate that these variables are inapplicable to <i>V. moulinsiana</i> . No values are given for suspended solids as this pollutant has no direct influence on the condition of the habitat for <i>moulinsiana</i> . No monitoring targets are set for hardness but assessments for projects must take account of the snail's need for water whose hardness must not fall below value expected for the catchment.
All habitats: Grassland Improved, Swamp, Marginal and Inundation, Standing Water	Annex 1 species of European importance and waterfowl assemblage including migratory species of European and national importance.	Extent of habitat.	Area (ha), measured periodically (frequency to be determined).	No significant decrease from reference level.	For all habitats for all qualifying species. Methodology for assessing target to be determined. Reference level to be determined.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		Disturbance in roosting and feeding areas	Reduction or displacement of birds, measured periodically (frequency to be determined).	No significant displacement of birds attributable to human disturbance in relation to reference level.	All qualifying breeding and wintering annex 1 and migratory species. Methodology for assessing target to be determined. Reference level to be determined.
All habitats: Grassland Improved, Swamp, Marginal and Inundation, Standing Water	Annex 1 species of European importance.	Food Availability	Abundance of live mammals and birds, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of food species year round in relation to reference level.	Small-medium sized mammals (voles, mice, rabbits) and birds (pipits to ducks) are important prey in the breeding season for marsh harriers and during the winter for hen harriers. Methodology for assessing target to be determined. Reference level to be determined.
Grassland Improved	Annex 1 species of European importance and migratory species of national importance.	Absence of obstruction to viewlines	Open terrain relatively free of obstructions (feeding, anti-predator, roosting), measured periodically (frequency to be determined).	No significant reduction in view-lines in feeding and roosting areas during the winter season.	White-fronted goose and wigeon prefer unrestricted views over 500 metres. Ruff and bean goose prefer unrestricted views over 200 metres. Methodology for assessing target to be determined.
Grassland Improved	Annex 1 species of European importance.	Food Availability	Presence and abundance of soil and ground surface invertebrates, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of prey species during the winter season in relation to reference level.	Dipteran flies, beetles and earthworms are important for Ruff. Methodology for assessing target to be determined. Reference level to be determined.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Grassland Improved	Nationally important migratory species.	Food availability	Presence and abundance of soft leaved plants , measured periodically (frequency to be determined).	No significant reduction in presence and abundance of food species during the winter season in relation to reference level.	<i>Trifolium repens, Lolium perenne, Poa trivialis</i> and <i>Holcus lanatus</i> are important for white-fronted goose. <i>Lolium, Glyceria, Agrostis and Alopecurus spp.</i> for wigeon. Methodology for assessing target to be determined. Reference level to be determined.
Grassland Improved	Nationally important migratory species.	Food availability	Presence and abundance of rough and smooth meadow grasses and crops, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of food species during the winter season in relation to reference level.	<i>Poa spp.</i> , potatoes, sugar beat and wheat are important for bean goose. Methodology for assessing target to be determined. Reference level to be determined.
Grassland Improved	Annex 1 species of European importance and migratory species of national importance.	Vegetation characteristics	Predominantly short grassland swards (feeding and roosting during the winter period), measured periodically (frequency to be determined).	Vegetation height throughout areas used for feeding and roosting during the winter season should not deviate significantly.	Bean goose require a sward height <20 cm within feeding areas during the winter season. Ruff require a vegetation height of <10cm within roostin areas during the winter season. Wigeon require a sward height <5 cm within feeding areas during the winter season. Methodology for assessing target to be determined.
Grassland Improved	Nationally important migratory species.	Proximity of roosting areas to feeding areas	Roosting areas close to feeding areas, measured periodically (frequency to be determined).	No significant reduction in proximity of roosting areas to feeding areas during the winter season.	Wigeon require daytime feeding areas and roosting areas within c50 metres of each other. Methodology for assessing target to be determined.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Grassland Improved	Annex 1 species of European importance.	Hydrology/ Flow	Wet fields with surface pools, measured periodically (frequency to be determined).	No significant reduction in soggy or flooded areas during the winter season.	Ruff prefer permanently wet and flooded areas with a water depth of <3 cm. Methodology for assessing target to be determined.
Swamp, Marginal and Inundation	Annex 1 species of European importance.	Landscape	Large, unbroken expanse of emergent vegetation (nesting, feeding, concealment), measured periodically (frequency to be determined).	No significant reduction in expanse of emergent vegetation year round.	Marsh Harrier require continuous reed over >20ha. Methodology for assessing target to be determined.
Swamp, Marginal and inundation	Annex 1 species of European importance.	Water depth	Shallow water within reeds, measured periodically (frequency to be determined).	Water depth and extent of shallows within reeds should not deviate significantly.	Marsh harrier require water throughout the reedbed of 10-30cm. Methodology for assessing target to be determined.
Standing Water	Migratory species of European and national importance.	Food Availability	Presence and abundance of aquatic plants, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of food species during the winter season in relation to reference level.	<i>Glyceria fluitans, Agrostis stolonifera, Chara, Potamogeton and Ceratophyllum spp</i> for gadwall. <i>Scirpus, Eleocharis, Carex, Potamogeton and Glyceria</i> for shoveler. <i>Chara, Nitella and Potamogeton spp.</i> are important for pochard and tufted duck. <i>Chara, Cladophora, Potamogeton, Ruppia, Ranunculus and Elodea</i> are important for Coot. Methodology for assessing target to be determined. Reference level to be determined.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Standing Water	Nationally important migratory species.	Food Availability	Presence and abundance of seed bearing plants, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of food species during the winter season in relation to reference level.	<i>Polygonum</i> , <i>Eleocharis</i> , <i>Rumex</i> and <i>Ranunculus</i> are important for Teal. Methodology for assessing target to be determined. Reference level to be determined.
Standing Water	Migratory species of European and national importance.	Food availability	Presence and abundance of aquatic invertebrates, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of prey species during the winter season in relation to reference level.	Hydrobia, crustaceans, caddisflies, diptera and beetles are important for shoveler. Hydrobia, flies, caddisfly, beetles and bugs are important for teal. Methodology for assessing target to be determined. Reference level to be determined.
Standing Water	Nationally important migratory species.	Food availability	Presence and abundance of benthic invertebrates, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of prey species during the winter season in relation to reference level.	Chironomid larvae are important for pochard. <i>Dreissena polymorpha</i> , chironomid larvae, <i>Gammarus</i> and <i>Hydrobia</i> are important for tufted duck. Methodology for assessing target to be determined. Reference level to be determined.
Standing Water	Nationally important migratory species.	Food availability	Presence and abundance of surface and benthic invertebrates, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of prey species during the winter season in relation to reference level.	<i>Mytilus</i> , <i>Dreissena polymorpha</i> and caddis-fly larvae are important for coot. Methodology for assessing target to be determined. Reference level to be determined.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Standing Water	Nationally important migratory species.	Food availability	Presence and abundance of fish, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of prey species during the winter season in relation to reference level.	Fish of 10-25 cm are important for cormorant. Methodology for assessing target to be determined. Reference level to be determined.
Standing Water	Migratory species of European and national importance.	Water depth	Areas of shallow medium and deep water (feeding), measured periodically (frequency to be determined).	Water depths should not deviate significantly during the winter season.	Cormorant require a water depth of 2-10m. Gadwall require a water depth of <25cm. A kleptoparasitic relationship with Coot can allow Gadwall to potentially exploit deeper areas up to 2m in depth. Shoveler and teal require a water depth of <30cm. Coot require a water depth of 0.5-2m. Pochard and tufted duck require a water depth of 2-5m. Methodology for assessing target to be determined.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Standing Water	Migratory species of national importance.	Water area	Large open areas of water(feeding, roosting), measured periodically (frequency to be determined).	No significant reduction in the area of open water for feeding and roosting during the winter season.	<p>Cormorant require one or more fresh waters of >20ha.</p> <p>Pochard require one or more fresh waters of >6ha.</p> <p>Bean geese require one or more freshwaters of 3-6 ha.</p> <p>Tufted duck require one or more freshwaters of >5ha.</p> <p>Coot require one or more freshwaters of >2ha.</p> <p>Methodology for assessing target to be determined.</p>



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cSAC: The Broads
SPA: Broadland
Component SSSI: Calthorpe Broad

Conservation objectives for the European Interest on the SSSI

The conservation objectives for the European interest on the SSSI are:

to maintain*, in favourable condition, the:

- Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior*.
- Natural eutrophic lakes with *Magnopotamion* or *Hydrocharition*-type vegetation.

to maintain*, in favourable condition, the habitats for the population of:

- Otter (*Lutra lutra*).

to maintain*, in favourable condition, the habitats for the populations of Annex1 bird species⁺ of European importance with particular reference to:

- open water
- swamp
- fen
- lowland wet grassland with ditches.

+ Marsh harrier, Hen harrier.

to maintain*, in favourable condition, the habitats for the populations of migratory bird species⁺ of European importance with particular reference to:

- open water
- swamp
- lowland wet grassland with ditches.

+ Shoveler.

to maintain*, in favourable condition, the habitats of the populations of waterfowl that contribute to the wintering waterfowl assemblage of European importance, with particular reference to,

- open water
- swamp and lowland wet grassland with ditches and water bodies.

* maintenance implies restoration if the feature is not currently in favourable condition.

The Conservation Objectives for The Broads candidate Special Area of Conservation and Broadland Special Protection Area are, in accordance with para C 10 of PPG 9, the reasons for which the cSAC was designated and the SPA classified. The entry of 30 January 1996 on the Register of European Sites gives the reasons for which the SPA was classified.

The **Broads cSAC** and **Broadland SPA** includes land within: Alderfen Broad SSSI, Ant Broads and Marshes SSSI, Barnby Broad and Marshes SSSI, Broad Fen, Dilham SSSI, Bure Broads and Marshes SSSI, Burgh Common and Muckfleet Marshes SSSI, Calthorpe Broad SSSI, Cantley Marshes SSSI, Crostwick Marsh SSSI, Decoy Carr, Acle SSSI, Ducan's Marsh, Claxton SSSI, Geldeston Meadows SSSI, Hall Farm Fen, Hemsby SSSI, Halvergate Marshes SSSI, Hardley Flood SSSI, Limpenhoe Meadows SSSI, Ludham-Potter Heigham Marshes SSSI, Poplar Farm Meadows, Langley SSSI, Priory Meadows, Hickling SSSI, Shallam Dyke Marshes, Thurne SSSI, Smallburgh Fen SSSI, Sprat's Water and Marshes, Carlton Colville SSSI, Stanley and Alder Carrs, Aldeby SSSI, Upper Thurne Broads and Marshes SSSI, Upton Broads and Marshes SSSI and Yare Broads and Marshes SSSI.

The **Broads cSAC** additionally includes land within: Damgate Marshes, Acle SSSI and Trinity Broads SSSI.

Favourable Condition Table for Calthorpe Broad SSSI

The Favourable Condition Table will be used by English Nature and other relevant authorities to determine if a site is in favourable condition. Favourable condition is achieved when the targets given below are met.

The favourable condition table should inform the scope and nature of any 'appropriate assessment' under the Habitats Regulations, but an appropriate assessment will also require consideration of issues specific to the individual plan or project. The favourable condition table does not by itself provide a comprehensive basis on which to assess plans and projects as required under Regulations 20-21, 24, 48-50 and 54 - 85. The scope and content of an appropriate assessment will depend upon the location, size and significance of the proposed project. English Nature will advise on a case by case basis.

Following an appropriate assessment, competent authorities are required to ascertain the effect on the integrity of the site. The integrity of the site is defined in para C10 of PPG9 as the coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified. The determination of favourable condition is separate from the judgement of effect upon integrity. For example, there may be a time-lag between a plan or project being initiated and a consequent adverse effect upon integrity becoming manifest in the condition assessment. In such cases, a plan or project may have an adverse effect upon integrity even though the site remains in favourable condition.

Annual counts for qualifying bird species will be used by English Nature, in the context of five year peak means, together with available information on UK population and distribution trends, to assess whether the SPA is continuing to make an appropriate contribution to the Favourable Conservation Status of the species across Europe.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i>, <i>Alnion incanae</i>, <i>Salicion alvae</i>)	Parts of NVC types W2 and W5 and 6)	Extent	Extent/location of stands	<p>No loss of ancient semi-natural stands</p> <p>At least current area of recent semi-natural stands maintained, although their location may alter.</p> <p>At least the area of ancient woodland retained</p>	<p>* Stand loss due to natural processes eg in minimum intervention stands may be acceptable.</p> <p>* A high proportion of this type of woodland may be recent and hence a dynamic interchange with open wet communities may occur.</p> <p>* Stand destruction may occur if the understorey and ground flora are irretrievably damaged even if the canopy remains intact.</p> <p>* Loss = 0.5 ha or 0.5% of the stand area, whichever is the smaller.</p> <p>* 20% canopy cover is conventionally taken as the lower limit for an area to be considered as woodland. Stands of willow scrub may pose difficulties of definition.</p> <p>* Area and location of stands may be assessed remotely or by site visit.</p>

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		3.Regeneration potential	Successful establishment of young stems in gaps or on the edge of a stand	<p>* Signs of seedlings growing through to saplings to young trees at sufficient density to maintain canopy density over a 10 yr period (or equivalent regrowth from coppice stumps).</p> <p>* No planting in stands.</p>	<p>* A proportion of gaps at any one time may develop into permanent open space; equally some current permanent open space/glades may in time regenerate to closed canopy.</p> <p>* Regeneration may often occur on the edges of stands rather than in gaps within it.</p> <p>* In coppice most of the regeneration will be as stump regrowth. See JNCC Guidance Note on likely desirable levels of regeneration.</p> <p>* The minimum level of regeneration to be acceptable from a nature conservation viewpoint is likely to be much less than that needed where wood production is also an objective.</p> <p>* Assess this attribute by walking through the wood in spring/summer.</p>

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		4. Composition	Cover of native versus non-native species (all layers) Death, destruction or replacement of native woodland species through effects of non-native fauna or external unnatural factors	<p>* At least the current level of site-native species maintained.</p> <p>* At least 90% of cover in any one layer of site-native or acceptable naturalised species.</p> <p>* Death, destruction or replacement of native woodland species through effects of introduced fauna or other external unnatural factors not more than 10% by number or area in a five year period.</p>	<p>* In sites where there might be uncertainty as to what counts as site-native or as an acceptable naturalised species this must be made clear (eg the position of poplar).</p> <p>* Where cover in any one layer is less than 100% then the 90% target applies to the area actually covered by that layer.</p> <p>* Factors leading to the death or replacement of woodland species could include pollution, including eutrophication from adjacent farmland; new diseases (eg alder dieback).</p> <p>* Damage to species by non-native species that does not lead to their death or replacement by non woodland species (eg damage from squirrels to trees that non-the -less survive) is not necessarily unacceptable in nature conservation terms.</p> <p>* Excessive browsing/grazing by even native ungulates may be considered an unnatural external factor where it leads to undesirable shifts in the composition/structure of the stand, although this may be picked up by attributes 2 or 5 anyway.</p> <p>* Assess this attribute by a walk through the site.</p>

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		5. Species, habitats, structures characteristic of the site.	Ground flora type Distinctive and desirable elements for a given site eg. locally uncommon species such as <i>Carex elata</i> ; veteran trees or rich invertebrate assemblages. Patches of associated habitats and transitions eg to ash wood, open fen and open water	* 80% of ground flora cover referable to relevant NVC wet woodland community (W 2, 5 and 6) * Distinctive elements maintained at current levels and in current locations (where appropriate). * Patches and transitions maintained in extent and where appropriate location.	* Changes leading to these targets not being met may be acceptable where this is due to natural processes. * Distinctive elements and patches should be marked on maps for ease of checking in the field wherever possible. * If there are species groups/assemblages that cannot be assessed directly on a general site visit then surrogate features should be given where possible, eg dead wood concentrations for associated invertebrates.
22.13 Natural eutrophic lakes with Magnopotamion or Hydrocharition type vegetation. Standing water	NVC types: A3 A9 A13 A4 Types '7', '8', '9' and '10' of the GB Standing Water Classification.	Extent of community.	Check extent of beds in July/August every 4 years.	Extensive beds of submerged macrophytes should be present. Maintain mixed community.	Submerged vegetation characterised by broad leaved <i>Potamogeton</i> species such as <i>Potamogeton perfoliatus</i> , <i>P lucens</i> , <i>P crispus</i> , <i>P natans</i> , <i>P x salicilifolius</i> , <i>P coloratus</i> , <i>P polygonifolius</i> , <i>P gramineus</i> , <i>P. alpinus</i> and <i>Hydrocharition</i> type vegetation. <i>Hydrocharis morsus-ranae</i> is a very rare associate with the <i>Magnopotamion</i> in the UK. Its community components are present, however, mainly <i>Spirodela polyrhiza</i> , <i>Lemna minor</i> , <i>Hippuris vulgaris</i> , <i>Utricularia vulgaris</i> and <i>Apium inundatum</i> . Community should be mixed and no one species should be present above 40% level of total amount of macrophyte presence.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Broad and ditch systems		Extent of <i>Potamogeton</i> species <i>Magnopotamion</i> .	Check species presence in July/August every 4 years.	Maintain species presence of all <i>Magnopotamion</i> and fine leaved <i>Potamogetons</i> .	No one <i>Potamogeton</i> species should be present above 40% level of total amount or level of macrophyte presence (see Water Quality comment).
		Extent of nationally scarce or threatened species.	Establish population size and position of nationally scarce, rare or threatened species over a period of 3 years, on a quarterly basis; thereafter every two years in July/August.	Maintain presence of all nationally scarce, rare or threatened plant species.	Nationally scarce, rare or threatened species can vary in population size and extent due to temporal/seasonal changes in climate which affects physical variables such as water temperature.
		Water quality	Arrange for analysis of quarterly measurements of Total P for first three years; thereafter annually in July/August.	Maintain water quality particularly Total P levels. For southern systems 100 $\mu\text{g l}^{-1}$ or below down to 65 $\mu\text{g l}^{-1}$.	The variable targets for Total P reflects the geographical range of this trophic state. The target for Total P should be set for individual SAC's and an acceptable range established. Increases in Total P suggest a need to move from annual July/August check, back to more intensive quarterly samples to verify whether change is real. Also check for cover shifts of macrophytes and dominant presence of pollution tolerant species above 40% level such as <i>Potamogeton pectinatus</i> , <i>Myriophyllum spicatum</i> and/or <i>Ceratophyllum demersum</i> .
		Water quantity	Check lake levels during July/August.	Maintain hydrology of lake or ditch system.	Hydrology involves not only lake or ditch levels but flushing rates; prevent lowering or raising of lake or ditch level through modification of outfalls. With ditch systems aim for constant high water table throughout the year Water abstraction may represent a significant issue through the reduction of ground water and flushing flows into marginal ditch systems.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		Sediment	Check for excessive growths of individual macrophytes ie above 40%.	Maintain sediment quality and quantity.	Effects of increased macrophyte growth also relates to water quality; if this is at target levels, then enrichment of sediments is an issue if broad leaved <i>Potamogeton</i> species decline and fine leaved <i>Potamogeton pectinatus</i> increases above 40% level or <i>Myriophyllum spicatum</i> / <i>Ceratophyllum demersum</i> become dominant. Introduced fish and recreational use of site might through sediment disturbance move sites out of favourable condition. Check for increases in siltation from catchment use changes or changes in sewage treatment.
River	Otter <i>Lutra lutra</i>	Water quality	EA scale	"Good", with no pollution incidents	Refer to Environment Agency for data
		Flow rate	Mean annual flow rate	No reduction attributable to increased abstraction.	Data from Environment Agency
		Site integrity	Total area	No reduction of fragmentation of area	
		Fish stocks	EA assessment	Fish stocks appropriate to the nutrient status of the river No significant decline in fish biomass or species diversity	Refer to Environment Agency for sample data
		Disturbance	Extent of public access to river	No significant change to river or bankside usage; no significant development	
		Bankside cover	Proportion of bank lined with trees, scrub or other thick cover	No overall permanent decrease	Some change acceptable as long as it is appropriately mitigated
		Presence of otters	Signs of otters	Signs of otters found at least once per year	Use data from national or county surveys

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
All habitats: Grassland Improved, Swamp, Marginal and Inundation, Standing Water	Annex 1 species of European importance and waterfowl assemblage including migratory species of European and national importance.	Extent of habitat.	Area (ha), measured periodically (frequency to be determined).	No significant decrease from reference level.	For all habitats for all qualifying species. Methodology for assessing target to be determined. Reference level to be determined.
		Disturbance in roosting and feeding areas	Reduction or displacement of birds, measured periodically (frequency to be determined).	No significant displacement of birds attributable to human disturbance in relation to reference level.	All qualifying breeding and wintering annex 1 and migratory species. Methodology for assessing target to be determined. Reference level to be determined.
All habitats: Grassland Improved, Swamp, Marginal and Inundation, Standing Water	Annex 1 species of European importance.	Food Availability	Abundance of live mammals and birds, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of food species year round in relation to reference level.	Small-medium sized mammals (voles, mice, rabbits) and birds (pipits to ducks) are important prey in the breeding season for marsh harriers and during the winter for hen harriers. Methodology for assessing target to be determined. Reference level to be determined.
Swamp, Marginal and Inundation	Annex 1 species of European importance.	Landscape	Large, unbroken expanse of emergent vegetation (feeding, concealment), measured periodically (frequency to be determined).	No significant reduction in expanse of emergent vegetation year round.	Methodology for assessing target to be determined.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Swamp, Marginal and Inundation	Annex 1 species of European importance.	Hydrology flow	Stable Water levels, measured periodically (frequency to be determined).	Water levels should not deviate significantly during the breeding season.	<10cm fluctuation is required during the breeding season for Marsh Harrier. Methodology for assessing target to be determined.
Standing Water	Migratory species of European and national importance.	Food Availability	Presence and abundance of aquatic plants, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of food species during the winter season in relation to reference level.	<i>Scirpus, Eleocharis, Carex, Potamogeton</i> and <i>Glyceria</i> for shoveler. <i>Chara, Cladophora, Potamogeton, Ruppia, Ranunculus</i> and <i>Elodea</i> are important for Coot. Methodology for assessing target to be determined. Reference level to be determined.
Standing Water	Nationally important migratory species.	Food Availability	Presence and abundance of seed bearing plants, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of food species during the winter season in relation to reference level.	<i>Polygonum, Eleocharis, Rumex</i> and <i>Ranunculus</i> are important for Teal. Methodology for assessing target to be determined. Reference level to be determined.
Standing Water	Migratory species of European and national importance.	Food availability	Presence and abundance of aquatic invertebrates, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of prey species during the winter season in relation to reference level.	Hydrobia, crustaceans, caddisflies, diptera and beetles are important for shoveler. Hydrobia, flies, caddisfly, beetles and bugs are important for teal. Methodology for assessing target to be determined. Reference level to be determined.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Standing Water	Nationally important migratory species.	Food availability	Presence and abundance of surface and benthic invertebrates, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of prey species during the winter season in relation to reference level.	Mytilus, Dreissena polymorpha and caddis-fly larvae are important for coot. Methodology for assessing target to be determined. Reference level to be determined.
Standing Water	Migratory species of European and national importance.	Water depth	Areas of shallow medium and deep water (feeding), measured periodically (frequency to be determined).	Water depths should not deviate significantly during the winter season.	Shoveler and teal require a water depth of <30cm. Coot require a water depth of 0.5-2m. Methodology for assessing target to be determined.
Standing Water	Migratory species of national importance.	Water area	Large open areas of water(feeding, roosting), measured periodically (frequency to be determined).	No significant reduction in the area of open water for feeding and roosting during the winter season.	Coot require one or more freshwaters of >2ha. Methodology for assessing target to be determined.



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cSAC: Norfolk Valley Fens Component SSSI: East Walton Common and Adcock's Common

Conservation objective for the European Interest on the SSSI

The conservation objectives for the European interests on the SSSI are:

to maintain*, in favourable condition, the:

- Alkaline fens
- Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion*, *Alnion incanae*, *Salicion alvae*)
- Calcareous fens with *Cladium mariscus* and species of the *Caricion davalliana*
- *Molinia* meadows on chalk, peat, clay or silt-laden soils (*Molinion caeruleae*)
- Semi-natural dry grasslands and scrubland facies: on calcareous substrates (*Festuco-Brometalia*)

to maintain*, in favourable condition, the habitats for the population of:

- Desmoulin's whorl snail (*Vertigo moulinsiana*)

* maintenance implies restoration if the feature is not currently in favourable condition.

The Conservation Objectives for Norfolk Valley Fens candidate Special Area of Conservation are, in accordance with para C10 of PPG 9, the reasons for which the cSAC was designated. The cSAC also includes land within Badley Moor, Dereham SSSI, Booton Common SSSI, Buxton Heath SSSI, Coston Fen, Runhall SSSI, Flordon Common SSSI, Foulden Common SSSI, Great Cressingham Fen SSSI, Holt Lowes SSSI, Potter and Scarning Fens SSSI, Sheringham and Beeston Regis Common SSSI, Southrepps Common SSSI, Swanagey Fen, Attleborough SSSI and Thompson Water, Carr and Common SSSI.

The favourable condition table will be used by English Nature to determine favourable condition and other relevant authorities to determine if a site is in favourable condition. Favourable condition is achieved when the targets set out below are met.

The favourable condition table should inform the scope and nature of any ‘appropriate assessment’ under the Habitats Regulations, but an appropriate assessment will also require consideration of issues specific to the individual plan or project. The favourable condition table does not by itself provide a comprehensive basis on which to assess plans or projects as required under Regulations 20-21, 24, 48-50 and 54-85. The scope and content of an appropriate assessment will depend upon the location, size and significance of the proposed project. English Nature will advise on a case by case basis.

Following an appropriate assessment, competent authorities are required to ascertain the effect on the integrity of the site. The integrity of the site is defined in para. C10 of PPG9 as ‘the coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified. The determination of favourable condition is separate from the judgement of effect upon integrity. For example, there may be a time lag between a plan or project being initiated and a consequent adverse effect upon integrity being manifest in the condition assessment. In such cases, a plan or project may have an adverse effect upon integrity even though the site remains in favourable condition.

Operational feature	Criteria feature	Attributes	Measures	Targets	Comments
Spring and seepage-fed	M13 black bog rush - blunt flowered rush	Extent	Extent identified in NVC survey (Norfolk Wildlife Trust 2000)	Maintain as an absolute minimum baseline the extent and area	Extent of fen communities may be

chalk-rich alkaline valley fen	<i>Schoenus nigricans</i> - <i>Juncus subnodulosus</i> fen. M9 bottle sedge - <i>Carex rostrata</i> - <i>Calliergon cuspidatum</i> mire		Extent identified for restoration to chalk-rich fen from other semi-natural habitats, in the East Walton Common Management Plan	identified by the Norfolk Wildlife Trust NVC survey 2000 Extend the chalk-rich fen communities into areas currently occupied by secondary scrub, which have been identified for restoration to fen in the East Walton Common Management Plan	subject to some natural dynamic variation, in response to extensive grazing pressure.
		Water quantity and quality	High piezometric head and permanently high water table (allowing for natural seasonal fluctuations) The spring water has low fertility and is rich in base ions.	Summer water levels (July-September) to fall no more than 10 cm below the surface.	
		Vegetation structure	Presence of varied sward structure with full range of vegetation heights, from close cropped to tall and ungrazed. Includes varying degrees of tussock height. Always includes elements of short pioneer fen vegetation	At height of summer (July August), fen vegetation to be typically no more than 0.5 metres tall, with random mosaic of differing vegetation and tussock heights across whole fen area.	As with extent, likely to be influenced by grazing regime, with vegetation responding to variable grazing pressure over time.
Operational feature	Criteria feature	Attributes	Measures	Targets	Comments
		Vegetation composition	Moss and liverwort carpets List A: <i>Schoenus nigricans</i> <i>Juncus subnodulosus</i> <i>Carex rostrata</i> List B: <i>Pinguicula vulgaris</i> <i>Parnassia palustris</i> <i>Anagallis tenella</i> <i>Briza media</i>	Moss dominated carpets to occupy between 15 and 30% of overall fen area. <i>Schoenus nigricans</i> and <i>Juncus subnodulosus</i> to be at least frequent within areas of M13. <i>Carex rostrata</i> to be at least occasional within M9. All species in list B to be at least occasional in M13 except <i>Carex diandra</i> , to be	

			<i>Carex diandra</i> <i>Epipactis palustris</i>	at least occasional in M9 only.	
		Negative indicators	<i>Phragmites australis</i> <i>Urtica dioica</i> <i>Salix cinerea</i> <i>Epilobium hirsutum</i> <i>Eupatorium cannabinum</i> <i>Fillipendula ulmaria</i>	Clumps of <i>Salix cinerea</i> to occupy no more than 5% of the overall fen area. All other species listed to be no more than rare in the overall fen area.	
Wet Alder Woodland	W6 alder - nettle <i>Alnus glutinosa</i> - <i>Urtica dioica</i> wet woodland	Area	Current extent	Maintain current extent.	
		Natural processes and structural development	Area of woodland allowed to function as minimum-intervention. Veteran trees.	Whole area of wet woodland to be retained as minimum-intervention. Old veteran alder specimens to be at least 2 per hectare.	
Operational feature	Criteria feature	Attributes	Measures	Targets	Comments
		Regeneration	Density, strength and distribution of young alder regeneration throughout woodland area.	Areas of regenerating, dense, young alder saplings to occupy no less than 10% of the overall non-intervention area.	
		Composition	List A: <i>Alnus glutinosa</i> List B: <i>Urtica dioica</i> <i>Fraxinus excelsior</i> <i>Betula pubescens</i> <i>Salix cinerea</i>	<i>Alnus glutinosa</i> to be at least abundant Species in List B to be at least occasional but never more than frequent.	
		Quality indicators	Water table Dead wood	Ground to remain permanently wet and swampy all year round. Fallen dead wood to be present throughout the entire woodland area. Standing dead wood to be at least	

				two dead trees per hectare across the the overall woodland area.	
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Operational feature	Criteria feature	Attributes	Measures	Targets	Comments
Stands of reed and tall herb fen rich in <i>Cladium mariscus</i>	S2 great fen sedge <i>Cladium mariscus</i> swamp	Extent	Extent identified by the Norfolk Valley Fen NVC survey (Smart 1992-93)	Maintain as a minimum baseline the extent and area identified by Smart (1992-93)	
	S25c common reed - hemp agrimony with great fen sedge <i>Phragmites australis</i> <i>Eupatorium cannabinum</i> (<i>Cladium mariscus</i> sub community) swamp		Extent identified for restoration to <i>Cladium</i> swamp from other semi-natural habitats, in the East Walton Common Management Plan	Extend the <i>Cladium</i> swamp into areas currently occupied by secondary scrub, which have been identified for restoration to fen in the East Walton Common Management Plan	
		Water quality and quantity	Base-rich, low fertility supply of groundwater. High piezometric head and permanently high water table (allowing for natural seasonal fluctuations)	No significant reduction in the flux of groundwater to these communities Allowing for natural seasonal variation, water table to drop no more than 20cm below ground level in summer.	These swamp communities can be adversely affected by excessive enrichment
		Vegetation structure	% cover of tall vegetation dominated by <i>Cladium mariscus</i> .	S2 is Tall <i>Cladium</i> dominated swamp, not less than 0.5 metres high, to occupy no less than 80% of the overall swamp area. S25c is tall <i>Phragmites</i> dominated swamp, not less than 0.5 metres	

Operational feature	Criteria feature	Attributes	Measures	Targets	Comments
		Vegetation composition	List A: <i>Cladium mariscus</i> <i>Phragmites australis</i> List B: <i>Hottonia palustris</i> <i>Mentha aquatica</i> <i>Caltha palustris</i>	high across 80% of the area. <i>Cladium mariscus</i> to be at least frequent in S2, occasional in S25c. <i>Phragmites</i> to be at least o be at least frequent in S25 c Species in List B to be at least occasional.	
		Negative indicators	encroaching <i>Salix cinerea</i> <i>Urtica dioica</i> <i>Rubus spp.</i>	Salix scrub to occupy no more than 10% of the overall swamp area	Encroaching negative species may indicate either drying out or insufficient management.
Purple moor grass mire	M24 purple moor grass - meadow thistle <i>Molinia caerulea</i> - <i>Cirsium dissectum</i> fen meadow	Extent	Extent identified in Norfolk Valley Fen NVC survey (Smart 1992-93)	Maintain as an absolute minimum baseline the overall area and extent identified by Smart (1992-93).	Extent of fen communities may be subject to some natural dynamic variation, in response to extensive grazing pressure
Operational feature	Criteria feature	Attributes	Measures	Targets	Comments
		Sward composition: positive indicator species	The frequency of positive indicator species from the list below to give an overall total of 2 frequent and 3 occasional. <i>Anagallis tenella</i> , <i>Angelica</i>	Overall total of at least two species/taxa are frequent plus at least three species/taxa are occasional throughout the sward.	Choice of species related to NVC types, restriction to unimproved grassland and wetness characteristics of

			<i>sylvestris</i> , <i>Cirsium dissectum</i> , <i>Erica tetralix</i> , <i>Eupatorium cannabinum</i> , <i>Filipendula ulmaria</i> , <i>Galium uliginosum</i> / <i>Galium palustre</i> , <i>Lotus pedunculatus</i> , Orchidaceae spp., <i>Pedicularis sylvatica</i> , <i>Potentilla erecta</i> , sedges (<i>C. flacca</i> , <i>C.nigra</i> , <i>C.panicea</i>), <i>Sphagnum</i> spp., <i>Succisa pratensis</i> , <i>Valeriana dioica</i> , <i>Viola palustris</i> .	<i>Eupatorium cannabinum</i> , <i>Angelica sylvestris</i> and <i>Filipendula ulmaria</i> should be no more than occasional.	habitat, all satisfactory when inside target. Among possible species that could be used, choice further restricted by ease of identification, visibility in recording period.
		Sward composition: frequency and cover of <i>Molinia caerulea</i>	Record the frequency and % cover of <i>Molinia caerulea</i> . Record in period early June - end of August.	At least frequent throughout the sward but no more than 80% cover	<i>Molinia</i> is characteristic of the community and should be at least frequent. However, increasing cover exceeding upper target is indicative of insufficient management by grazing or cutting.
Operational feature	Criteria feature	Attributes	Measures	Targets	Comments
		*Sward composition: cover of <i>Juncus</i> spp	Record the % cover of <i>Juncus</i> species from groups A and B. Record in period early June - end of August. Group A: jointed rushes (<i>Juncus acutiflorus</i> , <i>J. articulatus</i> , <i>J. subnodulosus</i>) Group B: <i>Juncus conglomeratus</i> , <i>J. effusus</i> and <i>J. inflexus</i> .	All species combined no more than 80% cover, of which no more than 50% made up of spp. from Group B	<i>Juncus</i> spp can be characteristic components of the communities. However, increasing cover is indicative of insufficient management by grazing or cutting and/or waterlogging. Group B species may indicate problems of eutrophication when outside target .

		*Sward composition: negative indicator species.	Record the % cover of negative indicator species. Record in period early June - end of August. <i>Cirsium palustre.</i> <i>Deschampsia cespitosa</i> <i>Phragmites australis</i> <i>Salix cinerea</i> <i>Cirsium vulgare</i>		Invasive species outside targets shows that habitat is not being managed sufficiently eg lack of or insufficient grazing/cutting
Operational feature	Criteria feature	Attributes	Measures	Targets	Comments
		Sward structure: average height	Sward height in period early June - end of August. (Upper target refers to pastures only.)	M24a Sward 5 cm or greater (excluding <i>Juncus</i> spp.) but no more than 25% over 60 cm M24b, M24c Sward 2 cm or greater (excluding <i>Juncus</i> spp.) but no more than 25% over 15 cm	Sward height above upper target shows that habitat is not being managed sufficiently eg lack of or insufficient grazing or if below lower target, is being overgrazed.
		Sward structure: litter	Cover of litter where in a more or less continuous layer, distributed either in patches or in one larger area. Record in period early June - end of August for pastures.	Total extent no more than 20% of the sward	Outside target indicates biomass removal is insufficient eg lack of or insufficient grazing or not cut for hay.
		Sward structure: bare ground	Extent of bare ground distributed through the sward, visible without disturbing the vegetation. Record in period early June - end of August.	No more than 5%	Outside target indicates problems with stock management eg poaching, supplementary feeding.
Unimproved	CG2	Extent	Total area (ha), mapped in	No reduction in area and extent	Recoverable reduction

calcareous grassland			relation to baseline surveys by Moore (1993) and Smart (1992) , in period May-July.	and any consequent fragmentation without prior consent	= unfavourable; non-recoverable reduction = partially destroyed. Excludes bare ground associated with rabbit warrens (see below).
Operational feature	Criteria feature	Attributes	Measures	Targets	Comments
		Sward composition: positive indicator species	Record the frequency of positive indicator species in period May-July. <i>Anthyllis vulneraria, Asperula cynanchica, Campanula glomerata, Cirsium acaule, Filipendula vulgaris, Gentianella spp., Helianthemum nummularium, Hippocrepis comosa, Leontodon hispidus/L. saxatilis, Leucanthemum vulgare, Linum catharticum, Lotus corniculatus, Pilosella officinarum (Hieracium pilosella), Plantago media, Polygala spp., Primula veris, Sanguisorba minor, Scabiosa columbaria, Serratula tinctoria* , Succisa pratensis, Thymus spp.*</i> not present.	At least four species/taxa frequent plus at least three species/taxa occasional throughout the sward.	Choice of species related to NVC type and restriction to unimproved grassland, considered satisfactory when inside target. Among possible species that could be used, choice further restricted by ease of identification, visibility in recording period.
		Sward composition: grass/herb ratio	Proportion of non-Graminae (“herbs”), in period May -July.	40-90%	Low proportion outside target indicates eutrophication, usually from fertilisers, or insufficient removal of biomass, leading to dominance by grasses.

Operational feature	Criteria feature	Attributes	Measures	Targets	Comments
		Sward composition: negative indicator species	Record % cover of <i>Brachypodium pinnatum</i> and <i>Bromopsis erecta</i> , in period May-July.	Neither species at more than 10% cover	Outside target indicates insufficient removal of biomass eg under-grazing.
		Sward composition: negative indicator species	Record the frequency and % cover of negative indicator species. Record in period May-July. <i>Cirsium arvense</i> , <i>Cirsium vulgare</i> , <i>Rumex crispus</i> , <i>Rumex obtusifolius</i> , <i>Senecio jacobaea</i> , <i>Urtica dioica</i> .	No species/taxa more than occasional throughout the sward or singly or together more than 5% cover	Invasive species chosen to indicate problems of eutrophication and disturbance from various sources when outside target eg poaching, stock feeding.
		Sward composition: negative indicator species	Record the frequency and % cover of all tree and scrub species excluding <i>Juniperus communis</i> , considered together, in period May-July.	No more than 5% cover.	Invasive species outside target shows that habitat is not being managed sufficiently eg under-grazed. If scrub/tree species are more than occasional throughout the sward but less than 5% cover, they are soon likely to become a problem if grazing levels are not sufficient or if scrub control is not being carried out.
Operational feature	Criteria feature	Attributes	Measures	Targets	Comments
		Sward structure: average height	Record sward height in period May-July.	Sward 2-10 cms.	Outside target indicates insufficient grazing or over-grazing.
		Sward structure: litter	Record cover of litter where in a	Total extent no more than 25% of	Outside target

			more or less continuous layer, distributed either in patches or in one larger area, in period May-July.	the sward	indicates biomass removal is insufficient eg under-grazed.
		Sward structure: bare ground	Record extent of bare ground (not rock) distributed through the sward, visible without disturbing the vegetation, in period May-July.	No more than 10% .	Outside target indicates management problems eg over-grazing.
		Sward structure: localized bare ground	Record extent of localized bare ground around rabbit warrens.	No more than 0.05 ha ie approximately 20x20 metres	Outside target indicates rabbit grazing and disturbance levels are too high.
Rivers and Fens	<i>Vertigo moulinsiana</i>	Structure and composition of fen vegetation	Area of stand of appropriate vegetation.	Maintain as a minimum baseline the extent of suitable habitat, and geographic distribution of the snail within the site as shown by 2000/01 survey.	The extent of suitable vegetation may change dynamically over time, in response to extensive grazing regimes.
Operational feature	Criteria feature	Attributes	Measures	Targets	Comments
		Water table	1. Depth below ground level 2 + 3. Signs of drying out on the vegetation	1. Water table close to the surface so ground remains squelchy, so that even in high summer, water comes to the surface when the soil is trodden. Winter flooding is allowed. 2. Not more than a 10% replacement of preferred species by tall reed or plants of dry	<i>Vertigo moulinsiana</i> requires highly humid conditions which are met by a high water table below the stand of vegetation where it lives. Unfavourable wet conditions can result from prolonged flooding in summer or artificially 'ponding' the water up too high.

				<p>conditions ie <i>Urtica dioica</i> and <i>Epilobium hirsutum</i>, and low grasses invading the litter layer.</p> <p>3. No more than a 10% replacement of tall monocotyledons by plants which prefer wetter conditions</p>	
		Vegetation height	height of the bulk of the vegetation in the stand.	Average height of the stand is no Less than 50cm.	<i>Vertigo moulinsiana</i> requires tall leaves where it lives for most of the year. Heavy grazing or mowing may be detrimental if it removes most of the taller vegetation.
Operational feature	Criteria feature	Attributes	Measures	Targets	Comments
		Shade from crub and trees	proportion of habitat covered in scrub and trees	No more than 10% increase in area of shade above baseline in year 2000.	



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Conservation objective for the European Interest on the SSSI

The conservation objectives for the European interests on the SSSI are :

to maintain*, in favourable condition, the habitats for the populations of the Annex 1 species⁺, of European importance, with particular reference to

- heathland
- acid grassland
- chalk grassland and/or inland dune communities

⁺ Stone curlew, Nightjar, Woodlark

* maintenance implies restoration if the feature is not currently in favourable condition.

The Conservation Objectives for Breckland proposed Special Protection Area are, in accordance with para C 10 of PPG 9, the reasons for which the SPA was classified.

The Breckland pSPA includes land within:

Barnhamcross Common SSSI	High Lodge, Mildenhall SSSI
Barnham Heath SSSI	How Hill Track SSSI
Beeches Pit, West Stow SSSI	Lakenheath Warren SSSI
Berner's Heath, Icklingham SSSI	Little Heath, BarnhamSSSI
Bridgham and Brettenham Heaths SSSI	Old Bodney Camp SSSI
Cavenham - Icklingham Heaths SSSI	Rex Graham Reserve SSSI
Cranwich Camp SSSI	Stanford Training Area SSSI
Cranberry Rough, Hockham SSSI	Thetford Golf Course and Marsh SSSI
Deadman's Grave, Icklingham SSSI	Thetford Heath SSSI
East Wretham Heath SSSI	Wangford Warren and Carr SSSI
Eriswell Low Warren SSSI	Warren Hill SSSI
Field Barn Heaths, Hilborough SSSI	Weather and Horn Heaths SSSI
Foxhole Heath, Eriswell SSSI	Weeting Heath SSSI
Gooderstone Warren SSSI	West Stow Heath SSSI
Grime's Graves SSSI	

The Favourable Condition Table will be used by English Nature and other relevant authorities to determine if a site is in favourable condition. Favourable condition is achieved when the targets given below are met.

The favourable condition table should inform the scope and nature of any 'appropriate assessment' under the Habitats Regulations, but an appropriate assessment will also require consideration of issues specific to the individual plan or project. The favourable condition table does not by itself provide a comprehensive basis on which to assess plans and projects as required under Regulations 20-21, 24, 48-50 and 54 - 85. The scope and content of an appropriate assessment will depend upon the location, size and significance of the proposed project. English Nature will advise on a case by case basis.

Following an appropriate assessment, competent authorities are required to ascertain the effect on the integrity of the site. The integrity of the site is defined in para C10 of PPG9 as the coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified. The determination of favourable condition is separate from the judgement of effect upon integrity. For example, there may be a time-lag between a plan or project being initiated and a consequent adverse effect upon integrity becoming manifest in the condition assessment. In such cases, a plan or project may have an adverse effect upon integrity even though the site remains in favourable condition.

Annual counts for qualifying bird species will be used by English Nature, in the context of five year peak means, together with available information on UK population and distribution trends, to assess whether the SPA is continuing to make an appropriate contribution to the Favourable Conservation Status of the species across Europe.

Operational feature	Criteria feature	Attribute	Measure	Target	Comment
All habitats; heathland, acid grassland, chalk grassland and/or inland dune communities	Annex 1 populations of European importance: stone-curlew, nightjar, woodlark	Extent and distribution of habitat	Area, measured periodically (frequency to be determined)	No significant decrease from reference level.	Methodology for assessing target to be determined. Reference level to be determined.
	Annex 1 populations of European importance: stone-curlew, nightjar, woodlark	Disturbance	Reduction or displacement of birds, measured periodically (frequency to be determined)	No significant reduction or displacement of birds attributable to human disturbance in relation to reference level.	Methodology for assessing target to be determined. Reference level to be determined.
	Annex 1 population of European importance: stone-curlew	Food availability -	Abundance of soil and dung invertebrates, measured periodically (frequency to be determined)	Presence and abundance of prey species should not deviate significantly from reference level	Including e.g. beetles, grasshoppers, flies, earthworms, snails, slugs. Methodology for assessing target to be determined. Reference level to be determined.
	Annex 1 population of European importance: nightjar	Food availability	Abundance of night-flying insects, measured periodically (frequency to be determined).	Presence and abundance of prey species should not deviate significantly from reference level.	Moths and beetles are important for nightjar. Methodology for assessing target to be determined. Reference level to be determined.
	Annex 1 population of European importance: woodlark	Food availability	Abundance of ground-surface invertebrates, measured periodically (frequency to be determined).	Presence and abundance of prey species should not deviate from reference level.	Including e.g. spiders, weevils, caterpillars. Methodology for assessing target to be determined. Reference level to be determined.
	Annex 1 population of European	Vegetation characteristics	Extent and proportions of patches of at least half-hectare with vegetation less than 2cm high and at least 10% bare ground and unrestricted views	No significant decrease in extent and proportions of patches	Methodology for assessing target to be determined. Reference level to be determined.

	importance: stone-curlew		over 200m, patches of medium height vegetation for roosting, measured periodically (frequency to be determined).	of at least half-hectare with vegetation less than 2cm high and at least 10% bare ground and unrestricted views over 200m, patches of medium height vegetation for roosting, measured periodically; from reference level.	
	Annex 1 population of European importance: nightjar	Vegetation characteristics	Open ground with low vegetation (feeding), and sparse woodland / scrub cover (feeding, roosting).	No significant decrease in extent and proportions of open ground with predominantly low vegetation (feeding), and sparse woodland / scrub cover (feeding, roosting) from reference level.	Nightjar require vegetation mostly 20-60cm high with less than 50% tree/scrub cover overall. Reference level to be determined.
	Annex 1 population of European importance: woodlark	Vegetation characteristics	Extent and proportions of mix of shrub / tree cover (display), short-medium vegetation and bare ground (feeding, roosting, nesting), measured periodically (frequency to be determined).	No significant decrease in extent and proportions of mix of shrub / tree cover (display), short-medium vegetation and bare ground (feeding, roosting, nesting).	Frequent bare patches under 0.5 ha within mosaic of short (under 5cm high) to medium (10-20cm high) ground vegetation, and small clumps of shrubs or trees. Methodology for assessing target to be determined. Reference level to be determined.

SLR/NS



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cSAC: The Broads
SPA: Broadland
Component SSSI: Limpenhoe Meadows

Conservation objectives for the European Interest on the SSSI

The conservation objectives for the European interest on the SSSI are:

to maintain*, in favourable condition, the:

- Natural eutrophic lakes with *Magnopotamion* or *Hydrocharition*-type vegetation.
- *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*).
- Hard oligo-mesotrophic waters with benthic vegetation of *Chara* spp..

to maintain*, in favourable condition, the habitats for the population of:

- Otter (*Lutra lutra*).

to maintain*, in favourable condition, the habitats for the populations of Annex1 bird species⁺ of European importance with particular reference to:

- fen meadow with ditches.

+ Marsh harrier, Hen harrier.

to maintain*, in favourable condition, the habitats for the populations of migratory bird species⁺ of European importance with particular reference to:

- fen meadow with ditches

+ Shoveler and Gadwall.

* maintenance implies restoration if the feature is not currently in favourable condition.

The Conservation Objectives for The Broads candidate Special Area of Conservation and Broadland Special Protection Area are, in accordance with para C 10 of PPG 9, the reasons for which the cSAC was designated and the SPA classified. The entry of 30 January 1996 on the Register of European Sites gives the reasons for which the SPA was classified.

The **Broads cSAC** and **Broadland SPA** includes land within: Alderfen Broad SSSI, Ant Broads and Marshes SSSI, Barnby Broad and Marshes SSSI, Broad Fen, Dilham SSSI, Bure Broads and Marshes SSSI, Burgh Common and Muckfleet Marshes SSSI, Calthorpe Broad SSSI, Cantley Marshes SSSI, Crostwick Marsh SSSI, Decoy Carr, Acle SSSI, Ducan's Marsh, Claxton SSSI, Geldeston Meadows SSSI, Hall Farm Fen, Hemsby SSSI, Halvergate Marshes SSSI, Hardley Flood SSSI, Limpenhoe Meadows SSSI, Ludham-Potter Heigham Marshes SSSI, Poplar Farm Meadows, Langley SSSI, Priory Meadows, Hickling SSSI, Shallam Dyke Marshes, Thurne SSSI, Smallburgh Fen SSSI, Sprat's Water and Marshes, Carlton Colville SSSI, Stanley and Alder Carrs, Aldeby SSSI, Upper Thurne Broads and Marshes SSSI, Upton Broads and Marshes SSSI and Yare Broads and Marshes SSSI.

The **Broads cSAC** additionally includes land within: Damgate Marshes, Acle SSSI and Trinity Broads SSSI.

Favourable Condition Table for Limpenhoe Meadows SSSI

The Favourable Condition Table will be used by English Nature and other relevant authorities to determine if a site is in favourable condition. Favourable condition is achieved when the targets given below are met.

The favourable condition table should inform the scope and nature of any 'appropriate assessment' under the Habitats Regulations, but an appropriate assessment will also require consideration of issues specific to the individual plan or project. The favourable condition table does not by itself provide a comprehensive basis on which to assess plans and projects as required under Regulations 20-21, 24, 48-50 and 54 - 85. The scope and content of an appropriate assessment will depend upon the location, size and significance of the proposed project. English Nature will advise on a case by case basis.

Following an appropriate assessment, competent authorities are required to ascertain the effect on the integrity of the site. The integrity of the site is defined in para C10 of PPG9 as the coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified. The determination of favourable condition is separate from the judgement of effect upon integrity. For example, there may be a time-lag between a plan or project being initiated and a consequent adverse effect upon integrity becoming manifest in the condition assessment. In such cases, a plan or project may have an adverse effect upon integrity even though the site remains in favourable condition.

Annual counts for qualifying bird species will be used by English Nature, in the context of five year peak means, together with available information on UK population and distribution trends, to assess whether the SPA is continuing to make an appropriate contribution to the Favourable Conservation Status of the species across Europe.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Molinia meadows on calcareous, peaty or clayey-silt-laden soils (<i>Molinion caeruleae</i>) Unimproved marshy grassland	NVC type M24	Extent	Total area (ha), mapped in relation to a site-specific reference level to be determined, in period early June - end of August.	No reduction in area and any consequent fragmentation without prior consent	Recoverable reduction = unfavourable; non-recoverable reduction = partially destroyed. Temporary reductions related to natural variation in hydrological conditions should be noted as such where information allows.
		Sward composition: positive indicator species	Record the frequency of positive indicator species from the list below to give an overall total of 2 frequent and 3 occasional. Record in period early June - end of August. <i>Anagallis tenella</i> , <i>Angelica sylvestris</i> , <i>Cirsium dissectum</i> , <i>Erica tetralix</i> , <i>Eupatorium cannabinum</i> , <i>Filipendula ulmaria</i> , <i>Galium uliginosum</i> / <i>Galium palustre</i> , Orchidaceae spp., <i>Pedicularis sylvatica</i> , <i>Potentilla erecta</i> , small blue-green <i>Carex</i> spp. (leaves less than 5mm wide) (<i>C. flacca</i> , <i>C. nigra</i> , <i>C. panicea</i>), <i>Sphagnum</i> spp., <i>Succisa pratensis</i> , <i>Valeriana dioica</i> , <i>Valeriana officinalis</i> , <i>Viola palustris</i> .	Overall total of at least two species/taxa frequent plus at least three species/taxa occasional throughout the sward.	Choice of species related to NVC types, restriction to unimproved grassland and wetness characteristics of habitat, all satisfactory when inside target. Among possible species that could be used, choice further restricted by ease of identification, visibility in recording period.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		Sward composition: frequency and cover of <i>Molinia caerulea</i>	Record the frequency and % cover of <i>Molinia caerulea</i> . Record in period early June - end of August.	At least frequent throughout the sward but no more than 80% cover	<i>Molinia</i> is a characteristic component of the community and should thus be at least frequent. However, increasing cover exceeding upper target is indicative of insufficient management by grazing or cutting.
		Sward composition: negative indicator species	Record the frequency and % cover of negative indicator species. Record in period early June- end of August. <i>Cirsium arvense, Cirsium vulgare, Rumex crispus, Rumex obtusifolius, Urtica dioica.</i>	No species more than occasional throughout the sward or singly or together more than 5% cover	Invasive species chosen to indicate problems of eutrophication and disturbance from various sources when outside target eg poaching, stock feeding.
		Sward composition: cover of <i>Juncus</i> spp	Record the % cover of <i>Juncus</i> species from groups A and B. Record in period early June - end of August. Group A: jointed rushes (<i>Juncus acutiflorus, J. articulatus, J. subnodulosus</i>) Group B: <i>Juncus conglomeratus, J. effusus and J. inflexus.</i>	All species combined no more than 80% cover, of which no more than 50% made up of spp. from Group B	<i>Juncus spp</i> can be characteristic components of the communities. However, increasing cover is indicative of insufficient management by grazing or cutting and/or waterlogging. Group B species may indicate problems of eutrophication from various sources when outside target eg stock feeding, fertiliser use.
		*Sward composition: negative indicator species.	Record the % cover of negative indicator species. Record in period early June - end of August. <i>Cirsium palustre.</i>	No more than 20% cover.	This species may be indicative of disturbance from various sources when outside target eg poaching, stock feeding.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		*Sward composition: negative indicator species.	Record the % cover of negative indicator species. Record in period early June - end of August. <i>Deschampsia cespitosa</i>	No more than 10% cover.	Increasing cover of <i>Deschampsia cespitosa</i> outside target may be indicative of insufficient management by grazing or cutting, overgrazing, disturbance by excessive poaching or altered hydrology eg reduced water movement in the soil profile during the year resulting in anaerobic conditions. Increasing cover may lead to reduced species richness in the community.
		*Sward composition: negative indicator species	Record the % cover or frequency of negative indicator species in period early June - end of August. All tree and scrub species excluding <i>Salix repens</i> and <i>Myrica gale</i> , considered together. NB If scrub/tree species in pastures are more than occasional throughout the sward but less than 5% cover, they are soon likely to become a problem if grazing levels are not sufficient or if scrub control is not being carried out.	No more than 5% cover.	Invasive species outside target shows that habitat is not being managed sufficiently eg lack of or insufficient grazing/cutting
		*Sward composition: % cover of <i>Phragmites australis</i>	Record the % cover of <i>Phragmites australis</i> in period early June-end of August.	No more than 10% cover.	Increasing cover of <i>Phragmites australis</i> outside target may be indicative of insufficient management by grazing or cutting. Lack of management may ultimately convert the community to tall-fen in some geographical areas.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		Sward composition: % cover of <i>Myrica gale</i> .	Record the % cover of <i>Myrica gale</i> in period early June - end of August.	No more than 10% cover	If <i>Myrica</i> cover outside target this shows that habitat is not being managed sufficiently eg lack of or insufficient grazing/cutting
		Sward composition: negative indicator species.	Record the frequency and % cover of negative indicator species. Record in period early June - end of August. <i>Senecio aquaticus</i>	No more than occasional throughout the sward or more than 5% cover	Outside target can discourage hay/grazing management because the species is toxic to livestock, and is palatable when dry.
		Sward structure: average height	Record sward height in period early June - end of August. (Upper target refers to pastures only.)	M24a Sward 5 cm or greater (excluding <i>Juncus</i> spp.) but no more than 25% over 60 cm M24b, Sward 2 cm or greater (excluding <i>Juncus</i> spp.) but no more than 25% over 15 cm	Sward height above upper target shows that habitat is not being managed sufficiently eg lack of or insufficient grazing or if below lower target, is being overgrazed.
		Sward structure: litter	Record cover of litter where in a more or less continuous layer, distributed either in patches or in one larger area. Record in period early June - end of August for pastures.	Total extent no more than 25% of the sward	Outside target indicates biomass removal is insufficient eg lack of or insufficient grazing or not cut for hay.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		Sward structure: bare ground	Record extent of bare ground distributed through the sward, visible without disturbing the vegetation. Record in period early June - end of August.	No more than 10%	Outside target indicates problems with stock management eg poaching, supplementary feeding.
22.13 Natural eutrophic lakes with Magnopotamion or Hydrocharition type vegetation. Standing water-ditch system	NVC types: A3 A9 A13 A4 Types '7', '8', '9' and '10' of the GB Standing Water Classification.	Extent of community.	Check extent of beds in July/August every 4 years.	Extensive beds of submerged macrophytes should be present. Maintain mixed community.	Submerged vegetation characterised by broad leaved <i>Potamogeton</i> species such as <i>Potamogeton perfoliatus</i> , <i>P lucens</i> , <i>P crispus</i> , <i>P natans</i> , <i>P x salicilifolius</i> , <i>P coloratus</i> , <i>P polygonifolius</i> , <i>P gramineus</i> , <i>P. alpinus</i> and <i>Hydrocharition</i> type vegetation. <i>Hydrocharis morsus-ranae</i> is a very rare associate with the <i>Magnopotamion</i> in the UK. Its community components are present, however, mainly <i>Spirodela polyrhiza</i> , <i>Lemna minor</i> , <i>Hippuris vulgaris</i> , <i>Utricularia vulgaris</i> and <i>Apium inundatum</i> . Community should be mixed and no one species should be present above 40% level of total amount of macrophyte presence.
		Extent of <i>Potamogeton</i> species <i>Magnopotamion</i> .	Check species presence in July/August every 4 years.	Maintain species presence of all <i>Magnopotamion</i> and fine leaved <i>Potamogetons</i> .	No one <i>Potamogeton</i> species should be present above 40% level of total amount or level of macrophyte presence (see Water Quality comment).
		Extent of nationally scarce or threatened species.	Establish population size and position of nationally scarce, rare or threatened species over a period of 3 years, on a quarterly basis; thereafter every two years in July/August.	Maintain presence of all nationally scarce, rare or threatened plant species.	Nationally scarce, rare or threatened species can vary in population size and extent due to temporal/seasonal changes in climate which affects physical variables such as water temperature.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		Water quality	Arrange for analysis of quarterly measurements of Total P for first three years; thereafter annually in July/August.	Maintain water quality particularly Total P levels. For southern systems 100 $\mu\text{g l}^{-1}$ or below, down to 65 $\mu\text{g l}^{-1}$.	The variable targets for Total P reflects the geographical range of this trophic state. The target for Total P should be set for individual SAC's and an acceptable range established. Increases in Total P suggest a need to move from annual July/August check, back to more intensive quarterly samples to verify whether change is real. Also check for cover shifts of macrophytes and dominant presence of pollution tolerant species above 40% level such as <i>Potamogeton pectinatus</i> , <i>Myriophyllum spicatum</i> and/or <i>Ceratophyllum demersum</i> .
		Water quantity	Check ditch levels during July/August.	Maintain hydrology of ditch system.	Hydrology involves not only ditch levels but flushing rates; prevent lowering or raising of ditch level through modification of outfalls. With ditch systems aim for constant high water table throughout the year Water abstraction may represent a significant issue through the reduction of ground water and flushing flows into marginal ditch systems.
		Sediment	Check for excessive growths of individual macrophytes ie above 40%.	Maintain sediment quality and quantity.	Effects of increased macrophyte growth also relates to water quality; if this is at target levels, then enrichment of sediments is an issue if broad leaved <i>Potamogeton</i> species decline and fine leaved <i>Potamogeton pectinatus</i> increases above 40% level or <i>Myriophyllum spicatum</i> / <i>Ceratophyllum demersum</i> become dominant. Introduced fish and recreational use of site might through sediment disturbance move sites out of favourable condition. Check for increases in siltation from catchment use changes or changes in sewage treatment.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
22.12/44 Hard oligo-mesotrophic waters with benthic vegetation of <i>Chara</i> formations	Almost exclusively type '4' of the GB Standing Water Classification. Very rarely types '5' and '10'.	Extent of <i>Chara</i> beds.	Check extent of <i>Chara</i> beds in July on an annual basis.	Maintain type and extent of <i>Chara</i> vegetation which is optimal for the interest feature. No significant decrease from reference level. Reference level to be determined.	<i>Chara</i> community. <i>Chara</i> formations of various species. Endangered/Vulnerable/Rare species are <i>Chara intermedia</i> , <i>Chara baltica</i> , <i>Chara canescens</i> , <i>Chara rudis</i> and <i>Chara connivens</i> ; and nationally scarce species are <i>Chara aspersa</i> , <i>Chara contraria</i> , <i>Chara pedunculata</i> and <i>Chara curta</i> . All are potentially components of a supporting community of <i>Myriophyllum spicatum</i> , <i>Potamogeton</i> species, <i>Callitriche</i> species and <i>Nymphaea alba/Nuphar lutea</i> . Lakes often fringed by <i>Phragmites australis</i> , <i>Typha angustifolia</i> and <i>Schoenoplectus lacustris</i> . Baseline survey should be carried out to determine present extent of <i>Chara</i> beds. Check for deterioration, extent of epiphytic growth on <i>Chara</i> . "Holes" in <i>Chara</i> beds should be monitored. <i>Elodea canadensis</i> should be absent. As <i>Chara</i> species are a colonising aspect of seral progression supporting macrophyte community may have to be managed to prevent seral progression. Extent will be variable according to site and can be variable according to seasonal changes In many cases <i>Chara</i> will be dominant feature.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Standing water-pond and ditch system.		Extent of supporting community including emergent vegetation.	Check community of associated macrophytes including, rare species, on an annual basis. Rare species include <i>Najas marina</i> . Maintain Chara and other species diversity.	Stable not expanding or contracting supporting community over 5 year period within limits of $\pm 10\%$ annually.	
		Water quality	Absence of filamentous algae and unicellular algal blooms. Establish Total P range by quarterly measurements over 3 year period, thereafter annually July/August.	For <i>Chara</i> vegetation $30 \mu\text{g l}^{-1}$ total phosphorus or below. Eutrophic conditions above $30 \mu\text{g l}^{-1}$ total phosphorus should not be prevalent.	Filamentous algae should be absent. The range of marl lakes exhibit a continuum of trophic condition from oligotrophy to low eutrophy. So the trophic condition for each marl lake type should be maintained. If filamentous algae present. Check for diffuse or point sources of pollution. Check Total P levels in aquifer if aquifer fed, check also that site not used for black-headed gull roosting or breeding. The target level should be set for individual SAC's and an acceptable range established. Increases in Total P level suggest need to move from annual July/August check back to more intensive quarterly samples to verify whether change is real.
		Sediment	Check condition of sediment and measure overall cover of marl every 10 years.	Marl production desirable, although this may be low or absent in oligotrophic hard waters. Some peat slumping acceptable, provided this is not induced due to land drainage.	Check immediate catchment area for drainage or land use change which might induce high sediment loads to enter system.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		Hydrology	Check water level in July annually.	Maintenance of stable water level desirable, although seasonal fluctuations expected.	Water level change downwards acceptable only in dry years. If lake level lowering due to outside water demands such as aquifer abstraction then counter measures need to be instigated.
River	Otter <i>Lutra lutra</i>	Water quality	EA scale	"Good", with no pollution incidents	Refer to Environment Agency for data
		Flow rate	Mean annual flow rate	No reduction attributable to increased abstraction.	Data from Environment Agency
		Site integrity	Total area	No reduction of fragmentation of area	
		Fish stocks	EA assessment	Fish stocks appropriate to the nutrient status of the river No significant decline in fish biomass or species diversity	Refer to Environment Agency for sample data
		Disturbance	Extent of public access to river	No significant change to river or bankside usage; no significant development	
		Bankside cover	Proportion of bank lined with trees, scrub or other thick cover	No overall permanent decrease	Some change acceptable as long as it is appropriately mitigated
		Presence of otters	Signs of otters	Signs of otters found at least once per year	Use data from national or county surveys

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
All habitats: Fen meadow , Swamp, Marginal and Inundation, Standing Water	Annex 1 species of European importance and waterfowl assemblage including migratory species of European importance.	Extent of habitat.	Area (ha), measured periodically (frequency to be determined).	No significant decrease from reference level.	For all habitats for all qualifying species. Methodology for assessing target to be determined. Reference level to be determined.
		Disturbance in roosting and feeding areas	Reduction or displacement of birds, measured periodically (frequency to be determined).	No significant displacement of birds attributable to human disturbance in relation to reference level.	All qualifying breeding and wintering annex 1 and migratory species. Methodology for assessing target to be determined. Reference level to be determined.
All habitats: Fen meadow , Swamp, Marginal and Inundation, Standing Water	Annex 1 species of European importance.	Food Availability	Abundance of live mammals and birds, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of food species year round in relation to reference level.	Small-medium sized mammals (voles, mice, rabbits) and birds (pipits to ducks) are important prey in the breeding season for marsh harriers and during the winter for hen harriers. Methodology for assessing target to be determined. Reference level to be determined.
Standing Water	Migratory species of European importance.	Food Availability	Presence and abundance of aquatic plants, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of food species during the winter season in relation to reference level.	<i>Glyceria fluitans</i> , <i>Agrostis stolonifera</i> , <i>Chara</i> , <i>Potamogeton</i> and <i>Ceratophyllum spp</i> for gadwall. <i>Scirpus</i> , <i>Eleocharis</i> , <i>Carex</i> , <i>Potamogeton</i> and <i>Glyceria</i> for shoveler. Methodology for assessing target to be determined. Reference level to be determined.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Standing Water	Migratory species of European importance.	Food availability	Presence and abundance of aquatic invertebrates, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of prey species during the winter season in relation to reference level.	Hydrobia, crustaceans, caddisflies, diptera and beetles are important for shoveler. Methodology for assessing target to be determined. Reference level to be determined.
Standing Water	Migratory species of European importance.	Water depth	Areas of shallow medium and deep water (feeding), measured periodically (frequency to be determined).	Water depths should not deviate significantly during the winter season.	Gadwall require a water depth of <25cm. A kleptoparasitic relationship with Coot can allow Gadwall to potentially exploit deeper areas up to 2m in depth. Shoveler require a water depth of <30cm. Methodology for assessing target to be determined.



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pSPA: Breckland
cSAC: Breckland
Component SSSI: Lakenheath Warren

Conservation objective for the European Interest on the SSSI

The conservation objectives for the European interests on the SSSI are :

to maintain*, in favourable condition, the:

- Semi-natural dry grasslands and scrubland facies: on calcareous substrates (*Festuco-Brometalia*)
- European dry heaths

to maintain*, in favourable condition, the habitats for the populations of the Annex 1 bird species⁺, of European importance, with particular reference to:

- heathland
- acid grassland
- chalk grassland and/or inland dune communities

⁺ Woodlark, Stone Curlew, Nightjar

* maintenance implies restoration if the feature is not currently in favourable condition.

The Conservation Objectives for Breckland proposed Special Protection Area and Breckland candidate Special Area of Conservation are, in accordance with para C 10 of PPG 9, the reasons for which the pSPA was proposed and the SAC designated .

The Breckland cSAC and the Breckland pSPA include land within:

Barnhamcross Common SSSI	Gooderstone Warren SSSI
Berner's Heath, Icklingham SSSI	Grime's Graves SSSI
Bridgham and Brettenham Heaths SSSI	Lakenheath Warren SSSI
Cavenham - Icklingham Heaths SSSI	Stanford Training Area SSSI
Cranwich Camp SSSI	Thetford Golf Course and Marsh SSSI
Deadman's Grave, Icklingham SSSI	Thetford Heath SSSI
East Wretham Heath SSSI	Wangford Warren and Carr SSSI
Field Barn Heaths, Hilborough SSSI	Weather and Horn Heaths SSSI
Foxhole Heath, Eriswell SSSI	Weeting Heath SSSI

The Breckland cSAC also includes land within:

Maidencross Hill SSSI	RAF Lakenheath SSSI
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The Breckland pSPA also includes land within

Barnham Heath SSSI	Little Heath, Barnham SSSI
Beeches Pit, West Stow SSSI	Old Bodney Camp SSSI
Cranberry Rough, Hockham SSSI	Rex Graham Reserve SSSI
Eriswell Low Warren SSSI	Warren Hill SSSI
High Lodge, Mildenhall SSSI	West Stow Heath SSSI
How Hill Track SSSI	

The Favourable Condition Table will be used by English Nature and other relevant authorities to determine if a site is in favourable condition. Favourable condition is achieved when the targets given below are met.

The favourable condition table should inform the scope and nature of any 'appropriate assessment' under the Habitats Regulations, but an appropriate assessment will also require consideration of issues specific to the individual plan or project. The favourable condition table does not by itself provide a comprehensive basis on which to assess plans and projects as required under Regulations 20-21, 24, 48-50 and 54 - 85. The scope and content of an appropriate assessment will depend upon the location, size and significance of the proposed project. English Nature will advise on a case by case basis.

Following an appropriate assessment, competent authorities are required to ascertain the effect on the integrity of the site. The integrity of the site is defined in para C10 of PPG9 as the coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified. The determination of favourable condition is separate from the judgement of effect upon integrity. For example, there may be a time-lag between a plan or project being initiated and a consequent adverse effect upon integrity becoming manifest in the condition assessment. In such cases, a plan or project may have an adverse effect upon integrity even though the site remains in favourable condition.

Annual counts for qualifying bird species will be used by English Nature, in the context of five year peak means, together with available information on UK population and distribution trends, to assess whether the SPA is continuing to make an appropriate contribution to the Favourable Conservation Status of the species across Europe.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Dry heathland	H1	Extent	Total area (approx. 21ha) as mapped by Smith (1996). Measure every two years if it is possible. [In specific cases see if there is a radical difference between cSAC and SSSI baseline, in which case discuss with specialist.]	Maintain existing area and extent	This community is confined to base-poor and oligotrophic sandy soils in the more continental lowlands of Eastern England. Large areas have been lost or fragmented to agriculture and forestry in the past.
		Bare ground	'Natural' bare ground (mineral soil) in intimate mosaic within vegetation 'Recreation' heavily used paralleling paths	'Natural' between 10-25% 'Heavily disturbed' <1%	Bryophytes and lichens are more extensive and diverse among open covers of <i>Calluna</i> . [Sandy profiles can be found in coastal and few inland dune systems, where there is, or has been, mobile sand.]
		Vegetation Structure	Record percentage of cover of <i>Calluna vulgaris</i> in different stages of its life cycle.	Cover of <i>Calluna vulgaris</i> to be between 25% minimum and 90% maximum. Mosaic with >10% young and 30-50% mature / degenerate <i>Calluna vulgaris</i> within unit. < 25% <i>Ulex europaeus</i>	<i>Calluna vulgaris</i> is often the only woody species present. Its cover and height are very variable. Grasses, when they occur, are present as scattered tussocks. <i>Ulex europaeus</i> is uncommon and restricted to disturbed areas.
		Vegetation Composition	Record frequency of any of the following species when present: List A <i>Calluna vulgaris</i> List B <i>Agrostis capillaris</i> , <i>Festuca ovina</i> , <i>Deschampsia flexuosa</i>	All species from List A must be at least frequent. At least two species of list B are at least occasional	Associated flora is for the most part confined to areas between <i>Calluna</i> clumps and the centre of collapsing bushes.
		Negative indicators	Record frequency and percentage cover of any of the following species when present: <i>Pteridium aquilinum</i> <i>Rhododendron ponticum</i> <i>Rubus</i> spp.	< 50 % cover degenerate/dead <i>Calluna vulgaris</i> No <i>Rhododendron ponticum</i>	<i>Rhododendron ponticum</i> and <i>Gaultheria shallon</i> can spread rapidly and have a negligible nature conservation value. Dense rhododendron casts deep shade which excludes other vegetation.

			<i>Senecio</i> spp. <i>Urtica dioica</i> <i>Pinus</i> spp. <i>Betula</i> spp. <i>Quercus</i> spp. <i>Cirsium arvense</i> <i>Cirsium vulgare</i> <i>Deschampsia flexuosa</i>	< 1 % <i>Rubus</i> spp., <i>Senecio</i> spp., <i>Urtica dioica</i> , <i>Cirsium</i> spp. < 5% trees, tree seedlings or other species of scrub. < 25% <i>Pteridium aquilinum</i> < 25% <i>Deschampsia flexuosa</i>	Scrub (shrubs, trees or tree seedlings) above 1 m in height is an important component of the heathland but its cover should be stable or not increasing as a whole. Management of bracken should be directed more to control than eradication.
			Record presence of signs of overgrazing, e.g. carpet, topiary or drumstick heather forms	No presence of signs of overgrazing.	Although lowland heathlands tend to be more under-grazed than over-grazed, localized overgrazing may occur. Management may need to be modified to tackle these situations.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Unimproved calcareous grassland	CG7b	*Extent	Total area (approx. 15ha), as mapped by Moore (1991) and Smith (1996), in period end April-mid July.	No reduction in area and any consequent fragmentation without prior consent	Recoverable reduction = unfavourable; non-recoverable reduction = partially destroyed. Excludes bare ground associated with rabbit warrens (see below).
		*Sward	Record the frequency of positive indicator species	At least two	Choice of species related to NVC type

		composition: positive indicator species	in period end April-mid July. <i>Aira</i> spp., <i>Aphanes</i> spp., <i>Astragalus danicus</i> , <i>Centaureum erythraea</i> , <i>Cladonia</i> spp , <i>Dianthus deltoides</i> , <i>Erigeron acer</i> , <i>Erodium cicutarium</i> , <i>Fragaria vesca</i> , <i>Galium verum</i> , <i>Helianthemum nummularium</i> , <i>Leontodon hispidus/L. saxatilis</i> , <i>Lotus corniculatus</i> , <i>Ornithopus perpusillus</i> , <i>Pilosella officinarum (Hieracium pilosella)</i> , <i>Plantago coronopus</i> , <i>Rumex acetosella</i> , <i>Sedum acre</i> , <i>Teesdalia nudicaulis</i> , <i>Thymus</i> spp.	species/taxa frequent and four species/taxa occasional throughout the sward	and restriction to unimproved grassland, considered satisfactory when inside target. Among possible species that could be used, choice further restricted by ease of identification, visibility in recording period.
		*Sward composition: negative indicator species	Record the frequency and % cover of negative indicator species. Record in period end April-mid July. <i>Carduus nutans</i> , <i>Chamerion angustifolium</i> , <i>Cirsium arvense</i> , <i>Cirsium vulgare</i> , <i>Plantago major</i> , <i>Urtica dioica</i> .	No species/taxa more than occasional throughout the sward or singly or together more than 5% cover	Invasive species chosen to indicate problems of eutrophication and disturbance from various sources when outside target eg poaching, stock feeding.
		*Sward composition: negative indicator species	Record the frequency and % cover of all tree and scrub species excluding <i>Juniperus communis</i> , considered together, in period end April-mid July. NB If scrub/tree species are more than occasional throughout the sward but less than 5% cover, they are soon likely to become a problem if grazing levels are not sufficient or if scrub control is not being carried out.	No more than 5% cover.	Invasive species outside target shows that habitat is not being managed sufficiently eg under-grazed.
		*Sward composition:	Record % cover of coarse grasses eg <i>Holcus lanatus</i> , <i>Dactylis glomerata</i> , in period end April-	No more than 10% cover	Invasive species chosen to indicate problems of eutrophication and

		negative indicator species	mid July.		insufficient removal of biomass eg under-grazing
		Sward composition: negative indicator species	Record frequency of <i>Senecio jacobaea</i> , in period end April-mid July.	No more than occasional throughout the sward	Frequency outside target indicates management problems eg over-grazing and trampling.
		Sward structure: average height	Record sward height in period end April-mid July.	Sward 5 cms or less	Outside target indicates insufficient grazing.
		Sward structure: litter	Record cover of litter where in a more or less continuous layer, distributed either in patches or in one larger area, in period end April-mid July.	Total extent no more than 25% of the sward	Outside target indicates biomass removal is insufficient eg under-grazed.
		Sward structure: bare ground	Record extent of bare ground (not rock) distributed through the sward, visible without disturbing the vegetation, in period end April-mid July.	No more than 15% .	Outside target indicates management problems eg over-grazing.
		Sward structure: localized bare ground	Record extent of localized bare ground around rabbit warrens.	No more than 0.25 ha ie approximately 50x50 metres	Heavy rabbit grazing usually associated with type but outside target indicates rabbit grazing and disturbance levels are too high.
	CG7c	*Extent	Total area (approx. 0.75ha), as mapped by Moore (1991), in period end April-August.	No reduction in area and any consequent fragmentation without prior consent	Recoverable reduction = unfavourable; non-recoverable reduction = partially destroyed.
		*Sward composition:	Record % cover of bushy or plate-like lichens, which may encrust the soil surface, rocks, pebbles	15-90%	Outside target indicates principal component of interest deteriorating eg

		lichen cover	or acrocarpous (unbranched) bryophytes.		from trampling damage, competition from vascular plants or bryophytes, or possibly the effects of atmospheric deposition.
		*Sward composition: presence of rare and scarce lichen species	Record identity and extent (abundance) of rare and scarce lichen species (specific to site). <i>Buellia asterella</i> <i>Squamarina lentigera</i> <i>Fulgensia fulgens</i> Baseline of extent yet to be determined.	Continued presence of rare and scarce species and no decline in extent (abundance)	Rare and scarce lichens are important contributors to the interest feature. Decline may be due to a number of factors including atmospheric deposition and insufficient grazing.
		*Sward composition: negative indicator species	Record the frequency and % cover of negative indicator species. Record in period end April-August. <i>Carduus nutans</i> , <i>Chamerion angustifolium</i> , <i>Cirsium arvense</i> , <i>Cirsium vulgare</i> , <i>Plantago major</i> , <i>Pteridium aquilinum</i> , <i>Urtica dioica</i> , coarse grasses eg <i>Holcus lanatus</i> .	No species/taxa more than occasional throughout the sward or singly or together more than 5% cover	Invasive species chosen to indicate problems of eutrophication and disturbance from various sources when outside target eg poaching, stock feeding.
		*Sward composition: negative indicator species	Record the frequency and % cover of all tree and scrub species, considered together, in period end April-August. NB If scrub/tree species are more than occasional throughout the sward but less than 1% cover, they are soon likely to become a problem if grazing levels are not sufficient or if scrub control is not being carried out.	No more than 1% cover.	Invasive species outside target shows that habitat is not being managed sufficiently eg under-grazed.
		*Sward composition: negative	Record % cover of mat-like, branching (pleurocarpous) bryophytes.	No more than 50% cover	Outside target indicates competition from robust pleurocarpous bryophytes is a problem eg because of under-

		indicator species			grazing or eutrophication.
		Sward composition: negative indicator species	Record frequency of <i>Senecio jacobaea</i> , in period end April-August.	No more than occasional throughout the sward	Frequency outside target indicates management problems eg over-grazing and trampling.
		Sward structure: average height	Record sward height in period end April-August.	Sward 5 cms or less	Outside target indicates insufficient grazing.
		Sward structure: litter	Record cover of litter where in a more or less continuous layer, distributed either in patches or in one larger area, in period end April-August.	Total extent no more than 5% of the sward	Outside target indicates biomass removal is insufficient eg under-grazed.
		*Sward structure: bare ground	Record extent of bare ground distributed through the sward, visible without disturbing the vegetation. Includes flints, pebbles and tiny tufts of acrocarpous (unbranched) bryophytes. Measure in period end April-August.	10-50%	Inside target indicates open conditions required by lichens are available.
		Sward structure: rabbit grazing levels	Record frequency of rabbit droppings.	Rabbit droppings frequent throughout the sward.	Heavy rabbit grazing usually strongly associated with the habitat, creating conditions suitable for lichens.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
All habitats; heathland, acid grassland, chalk grassland and/or inland dune communities	Annex 1 populations of European importance: stone-curlew, nightjar, woodlark	Extent and distribution of habitat	Area, measured periodically (frequency to be determined)	No significant decrease from reference level.	Methodology for assessing target to be determined. Reference level to be determined.
	Annex 1 populations of European importance: stone-curlew, nightjar, woodlark	Disturbance	Reduction or displacement of birds, measured periodically (frequency to be determined)	No significant reduction or displacement of birds attributable to human disturbance in relation to reference level.	Methodology for assessing target to be determined. Reference level to be determined.
	Annex 1 population of European importance: stone-curlew	Food availability -	Abundance of soil and dung invertebrates, measured periodically (frequency to be determined)	Presence and abundance of prey species should not deviate significantly from reference level	Including e.g. beetles, grasshoppers, flies, earthworms, snails, slugs. Methodology for assessing target to be determined. Reference level to be determined.
	Annex 1 population of European importance:	Food availability	Abundance of night-flying insects, measured periodically (frequency to be determined).	Presence and abundance of prey species should not deviate significantly	Moths and beetles are important for nightjar. Methodology for assessing target to be

	nightjar			from reference level.	determined. Reference level to be determined.
	Annex 1 population of European importance: woodlark	Food availability	Abundance of ground-surface invertebrates, measured periodically (frequency to be determined).	Presence and abundance of prey species should not deviate from reference level.	Including e.g. spiders, weevils, caterpillars. Methodology for assessing target to be determined. Reference level to be determined.
	Annex 1 population of European importance: stone-curlew	Vegetation characteristics	Extent and proportions of patches of at least half-hectare with vegetation less than 2cm high and at least 10% bare ground and unrestricted views over 200m, patches of medium height vegetation for roosting, measured periodically (frequency to be determined).	No significant decrease in extent and proportions of patches of at least half-hectare with vegetation less than 2cm high and at least 10% bare ground and unrestricted views over 200m, patches of medium height vegetation for roosting, measured periodically; from reference level.	Methodology for assessing target to be determined. Reference level to be determined.
	Annex 1 population of European importance: nightjar	Vegetation characteristics	Extent and proportions of open ground with predominantly low vegetation (feeding), bare patches (nesting), and sparse woodland / scrub cover (feeding, roosting) measured periodically (frequency to be determined).	No significant decrease in extent and proportions of open ground with predominantly low vegetation (feeding), bare patches (nesting),	Nightjar require vegetation mostly of 20-60cm with frequent bare patches greater than 2m ² , 10-20% bare ground (nesting) and less than 50% tree/scrub cover overall Reference level to be determined

				and sparse woodland / scrub cover (feeding, roosting) from reference level.	
	Annex 1 population of European importance: woodlark	Vegetation characteristics	Extent and proportions of mix of shrub / tree cover (display), short-medium vegetation and bare ground (feeding, roosting, nesting), measured periodically (frequency to be determined).	No significant decrease in extent and proportions of mix of shrub / tree cover (display), short-medium vegetation and bare ground (feeding, roosting, nesting).	Frequent bare patches under 0.5 ha within mosaic of short (under 5cm high) to medium (10-20cm high) ground vegetation, and small clumps of shrubs or trees. Methodology for assessing target to be determined. Reference level to be determined.

SLR/NS



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pSPA: Breckland Component SSSI: How Hill Track

Conservation objective for the European Interest on the SSSI

The conservation objectives for the European interests on the SSSI are :

to maintain*, in favourable condition, the habitats for the populations of the Annex 1 species⁺, of European importance, with particular reference to

- heathland
- acid grassland
- chalk grassland and/or inland dune communities

⁺ Stone curlew

* maintenance implies restoration if the feature is not currently in favourable condition.

The Conservation Objectives for Breckland proposed Special Protection Area are, in accordance with para C 10 of PPG 9, the reasons for which the SPA was classified.

The Breckland pSPA includes land within:

Barnhamcross Common SSSI	High Lodge, Mildenhall SSSI
Barnham Heath SSSI	How Hill Track SSSI
Beeches Pit, West Stow SSSI	Lakenheath Warren SSSI
Berner's Heath, Icklingham SSSI	Little Heath, BarnhamSSSI
Bridgham and Brettenham Heaths SSSI	Old Bodney Camp SSSI
Cavenham - Icklingham Heaths SSSI	Rex Graham Reserve SSSI
Cranwich Camp SSSI	Stanford Training Area SSSI
Cranberry Rough, Hockham SSSI	Thetford Golf Course and Marsh SSSI
Deadman's Grave, Icklingham SSSI	Thetford Heath SSSI
East Wretham Heath SSSI	Wangford Warren and Carr SSSI
Eriswell Low Warren SSSI	Warren Hill SSSI
Field Barn Heaths, Hilborough SSSI	Weather and Horn Heaths SSSI
Foxhole Heath, Eriswell SSSI	Weeting Heath SSSI
Gooderstone Warren SSSI	West Stow Heath SSSI
Grime's Graves SSSI	

The Favourable Condition Table will be used by English Nature and other relevant authorities to determine if a site is in favourable condition. Favourable condition is achieved when the targets given below are met.

The favourable condition table should inform the scope and nature of any 'appropriate assessment' under the Habitats Regulations, but an appropriate assessment will also require consideration of issues specific to the individual plan or project. The favourable condition table does not by itself provide a comprehensive basis on which to assess plans and projects as required under Regulations 20-21, 24, 48-50 and 54 - 85. The scope and content of an appropriate assessment will depend upon the location, size and significance of the proposed project. English Nature will advise on a case by case basis.

Following an appropriate assessment, competent authorities are required to ascertain the effect on the integrity of the site. The integrity of the site is defined in para C10 of PPG9 as the coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified. The determination of favourable condition is separate from the judgement of effect upon integrity. For example, there may be a time-lag between a plan or project being initiated and a consequent adverse effect upon integrity becoming manifest in the condition assessment. In such cases, a plan or project may have an adverse effect upon integrity even though the site remains in favourable condition.

Annual counts for qualifying bird species will be used by English Nature, in the context of five year peak means, together with available information on UK population and distribution trends, to assess whether the SPA is continuing to make an appropriate contribution to the Favourable Conservation Status of the species across Europe.

Operational feature	Criteria feature	Attribute	Measure	Target	Comment
All habitats; heathland, acid grassland, chalk grassland and/or inland dune communities	Annex 1 populations of European importance: stone-curlew	Extent and distribution of habitat	Area, measured periodically (frequency to be determined)	No significant decrease from reference level.	Methodology for assessing target to be determined. Reference level to be determined.
	Annex 1 populations of European importance: stone-curlew	Disturbance	Reduction or displacement of birds, measured periodically (frequency to be determined)	No significant reduction or displacement of birds attributable to human disturbance in relation to reference level.	Methodology for assessing target to be determined. Reference level to be determined.
	Annex 1 population of European importance: stone-curlew	Food availability -	Abundance of soil and dung invertebrates, measured periodically (frequency to be determined)	Presence and abundance of prey species should not deviate significantly from reference level	Including e.g. beetles, grasshoppers, flies, earthworms, snails, slugs. Methodology for assessing target to be determined. Reference level to be determined.
	Annex 1 population of European importance: nightjar	Food availability	Abundance of night-flying insects, measured periodically (frequency to be determined).	Presence and abundance of prey species should not deviate significantly from reference level.	Moths and beetles are important for nightjar. Methodology for assessing target to be determined. Reference level to be determined.
	Annex 1 population of European importance: stone-curlew	Vegetation characteristics	Extent and proportions of patches of at least half-hectare with vegetation less than 2cm high and at least 10% bare ground and unrestricted views over 200m, patches of medium height vegetation for roosting, measured periodically (frequency to be determined).	No significant decrease in extent and proportions of patches of at least half-hectare with vegetation less than 2cm high and at least 10% bare ground and unrestricted views over 200m, patches of medium height vegetation for roosting, measured periodically; from reference level.	Methodology for assessing target to be determined. Reference level to be determined.

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cSAC: Norfolk Valley Fens Component SSSI: Holt Lowes

Conservation objective for the European Interest on the SSSI

The conservation objectives for the European interests on the SSSI are:

to maintain*, in favourable condition, the:

- Alkaline fens
- European dry heaths
- Northern Atlantic wet heaths with *Erica tetralix*
- *Molinia* meadows on clacareous, peaty of clayey-silt-laden soils (*Molinion caeruleae*)

* maintenance implies restoration if the feature is not currently in favourable condition.

The Conservation Objectives for Norfolk Valley Fens candidate Special Area of Conservation are, in accordance with para C10 of PPG 9, the reasons for which the cSAC was designated. The cSAC also includes land within Badley Moor, Dereham SSSI, Booton Common SSSI, Buxton Heath SSSI, Coston Fen, Runhall SSSI, East Walton and Adcock's Common SSSI, Flordon Common SSSI, Foulden Common SSSI, Great Cressingham Fen SSSI, Potter and Scarning Fens SSSI, Sheringham and Beeston Regis Common SSSI, Southrepps Common SSSI, Swangey Fen, Attleborough SSSI and Thompson Water, Carr and Common SSSI.

Favourable Condition Table for Holt Lowes SSSI

The favourable condition table will be used by English Nature to determine favourable condition and other relevant authorities to determine if a site is in favourable condition. Favourable condition is achieved when when the targets set out below are met.

The favourable condition table should inform the scope and nature of any ‘appropriate assessment’ under the Habitats Regulations, but an appropriate assessment will also require consideration of issues specific to the individual plan or project. The favourable condition table does not by itself provide a comprehensive basis on which to assess plans or projects as required under Regulations 20-21, 24, 48-50 and 54-85. The scope and content of an appropriate assessment will depend upon the location, size and significance of the proposed project. English Nature will advise on a case by case basis.

Following an appropriate assessment, competent authorities are required to ascertain the effect on the integrity of the site. The integrity of the site is defined in para. C10 of PPG9 as ‘the coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified. The determination of favourable condition is separate from the judgement of effect upon integrity. For example, there may be a time lag between a plan or project being initiated and a consequent adverse effect upon integrity being manifest in the condition assessment. In such cases, a plan or project may have an adverse effect upon integrity even though the site remains in favourable condition.

Operational feature	Criteria feature	Attributes	Measures	Targets	Comments
Spring and seepage-fed chalk-rich alkaline valley fen	M13 black bog rush - blunt flowered rush <i>Schoenus nigricans</i> - <i>Juncus subnodulosus</i> fen.	Extent	Extent identified by NVC survey (Norfolk Wildlife Trust 2000) Extent identified for restoration to chalk-rich fen from other semi-natural habitats, in the Holt Lowes Management Plan 2000-2004.	Maintain as an absolute minimum baseline the overall area and extent identified by the Norfolk Wildlife Trust NVC survey 2000. Extend the chalk-rich fen into areas currently occupied by secondary woodland or scrub, which have been identified for restoration to fen in the Holt Lowes Management Plan 2000-2004.	Extent of fen communities may be subject to some natural dynamic variation, in response to extensive grazing pressure.
		Water Quantity and Quality	High piezometric head and permanently high water table (allowing for seasonal fluctuations). Spring water has low fertility and is rich in base ions.	Summer water levels (July - September) to fall no more than 10cm below ground surface.	
		Vegetation Structure	Presence of varied sward structure with full range of vegetation heights from close-cropped to tall and ungrazed. Includes varying degrees of tussock height. Always includes elements of short pioneer fen vegetation.	At height of summer (July-August) fen vegetation to be typically no more than 0.5 metres tall, with random mosaic of differing vegetation and tussock heights across whole fen area.	Again, this is likely to be influenced by the grazing regime, with vegetation responding to variable grazing pressure over time
Operational feature	Criteria feature	Attributes	Measures	Targets	Comments
		Vegetation Composition	Brown moss carpets List A: <i>Schoenus nigricans</i> <i>Juncus subnodulosus</i> List B: <i>Pinguicula vulgaris</i> <i>Parnassia palustris</i>	Low growing brown moss carpets to occupy between 5-10% of overall fen area Both species in list A to be at least frequent	

			<i>Anagallis tenella</i> Orchid species	All species in list B to be at least occasional.	
		Negative Indicators	<i>Phragmites australis</i> <i>Urtica dioica</i> <i>Salix cinerea</i> <i>Epilobium hirsutum</i> <i>Eupatorium cannabinum</i> <i>Calluna vulgaris</i> <i>Fillipendula ulmaria</i>	clumps of <i>Salix cinerea</i> to occupy no more than 5% of the overall fen area. All other species listed to be no more than rare in the overall fen area.	Presence above limits of <i>Calluna</i> may indicate acidification. Others indicate neglect or eutrophication.
Dry heathland	H1 ling heather - sheep's fescue (<i>Calluna vulgaris</i> - <i>Festuca ovina</i>) heath H8 ling heather - western gorse (<i>Calluna vulgaris</i> - <i>Ulex gallii</i>) heath	Extent	Extent identified by NVC survey (Norfolk Wildlife Trust 2000) Extent identified for restoration to dry heather heath from other semi-natural habitats in Holt Lowes Management Plan 2000-2004.	Maintain as absolute minimum baseline extent identified by Norfolk Wildlife Trust NVC survey 2000. Extend into areas currently occupied by scrub and secondary woodland, but identified for restoration to dry heather heath, in Holt Lowes Management Plan 2000-2004.	The H1 community is confined to acidic sandy soils in the more continental lowlands of Eastern England. H8 occurs on free-draining, acid to circumneutral soils in the warm oceanic regions of lowland England.
Operational feature	Criteria feature	Attributes	Measures	Targets	Comments
		Bare ground	'Natural' bare ground (exposed mineral soil) in random, intimate mosaic within heath vegetation. 'Artificial' - caused by excessive or inappropriate human use ie eroded gulleys and pathways	no less than 5% and no more than 10% of the open heath <1% of overall heath area.	Bryophytes and lichens are more extensive and diverse among open covers of <i>Calluna</i> .
		Vegetation Structure	Distribution, % cover and proportions of <i>Calluna vulgaris</i> in different stages of its life cycle.	<i>Calluna vulgaris</i> to be the most characteristic and dominant species throughout both H1 and H8. The <i>Calluna</i> dominated mosaic comprises young pioneer or growth phase heather (25-35%), mature phase heather (25-35%) and older	In H1, <i>Calluna vulgaris</i> is often the only woody species present. Both communities support small localised patches of acid grasses.

				degenerate heather (25-35%)	
		Vegetation Composition	Presence and frequency of the following species: List A: <i>Calluna vulgaris</i> <i>Ulex gallii</i> <i>Erica cinerea</i> List B: <i>Agrostis capillaris</i> <i>Festuca ovina</i> <i>Deschampsia flexuosa</i> <i>Potentilla erecta</i>	<i>Calluna vulgaris</i> is at least frequent within H1. All three species from List A are at least frequent within H8 At least two species of List B are at least occasional. <i>Potentilla erecta</i> is occasional in H8	Associated flora is for the most part confined to areas between <i>Calluna</i> clumps and the center of collapsing bushes. In H8, <i>Ulex gallii</i> forms an intricate mosaic with <i>Calluna vulgaris</i> .
Operational feature	Criteria feature	Attributes	Measures	Targets	Comments
		Negative indicators	Frequency and percentage cover of any of the following species when present: <i>Pteridium aquilinum</i> <i>Rubus</i> spp. <i>Senecio</i> spp. <i>Urtica dioica</i> <i>Pinus</i> spp. <i>Betula</i> spp. <i>Quercus</i> spp. <i>Cirsium arvense</i> <i>Cirsium vulgare</i>	< 1 % of open heath to be occupied by <i>Rubus</i> spp., <i>Senecio</i> spp., <i>Urtica dioica</i> , <i>Cirsium</i> spp. Secondary scrub to occupy no more than 10% of the open dry heath, as scattered <i>Betula</i> , <i>Quercus</i> and <i>Pinus</i> trees and small clumps. <i>Quercus</i> and <i>Pinus</i> spp to comprise no more than 20% of the proportion of secondary scrub. <i>Pteridium aquilinum</i> to occupy no more than 5% of the overall open dry heath, and to be almost entirely confined to in or around secondary scrub areas.	Invasion of shrubs and trees is arrested by extensive grazing and cutting. Invasion by <i>Pteridium</i> is arrested by extensive grazing and chemical treatment.
			Evidence of overgrazing not compatible with the specified vegetation structure ie excessive close-cropped carpets, topiary or drumstick heather forms.	No evidence of overgrazing.	Although lowland heathlands tend to be more under-grazed than over-grazed, localized overgrazing may occur. Management may need to be modified to tackle

					these situations.
Operational feature	Criteria feature	Attributes	Measures	Targets	Comments
Wet heathland	M16 cross-leaved heath - <i>Sphagnum Erica tetralix - Sphagnum compactum</i> wet heath M14 black bog-rush bog ashpodel - <i>Schoenus nigricans bog ashpodel</i> mire	Extent	Extent identified by NVC survey (Norfolk Wildlife Trust 2000) Extent identified for restoration to wet heath from other semi-natural habitats in Holt Lowes Management Plan 2000-2004	Maintain as absolute minimum baseline extent identified by Norfolk Wildlife Trust NVC survey 2000. Extend into areas currently occupied by scrub and secondary woodland, but identified for restoration to wet heath, in Holt Lowes Management Plan 2000-2004.	M16 and M14 are characteristic of the drier south and east.
		Bare ground	Natural bare ground (exposed mineral soil or peat) in random, intimate mosaic within wet heath vegetation Inappropriate or excessive human use ie eroded pathways or gulleys.	no less than 3% and no more than 5% of the open wet heath <1% of overall wet heath area.	M16 is characteristic of acid, oligotrophic peats.
Operational feature	Criteria feature	Attributes	Measures	Targets	Comments
		Vegetation Structure	Distribution and % cover of <i>Erica tetralix</i> and <i>Calluna vulgaris</i> in the	<i>Erica tetralix</i> is abundant and the dominant ericaceous species.	M16 presents a variable mixture of

			<p>different stages of their life cycle.</p> <p>% cover and proportion of wet heath sward that is supports <i>Molinia</i> tussocks</p> <p>% cover and distribution of pioneer phase wet heath, with ephemeral pools, low growing moss carpets, young <i>Erica tetralix</i>, <i>Drosera spp.</i> and <i>Eriophorum spp.</i></p>	<p>Overall, <i>Calluna vulgaris</i> comprises no more than 20% of ericacious component in the sward. All growth phases present .</p> <p>Scattered tussocks of <i>Molinia caerulea</i> no more than 20% of wet heath area.</p> <p>Pioneer phase wet heath to occupy no less than 10% and no more than 25% of overall wet heath area. Low growing moss carpets and young <i>Erica tetralix</i>, <i>Drosera</i> and <i>Eriophorum spp.</i> are always present.</p>	<p><i>Erica tetralix</i>, <i>Calluna vulgaris</i>, and <i>Molinia caerulea</i> in open, low stands, with a ground cover of bryophytes and lichens.</p> <p>M14 supports a tussock rich sward with fewer dwarf heather type shrubs.</p> <p>Extensive grazing, and the seasonally wet water table may transform the appearance of stands and produce greater structural diversity.</p>
Operational feature	Criteria feature	Attributes	Measures	Targets	Comments
		Vegetation Composition	<p>Frequency of any of the following species when present:</p> <p>List A <i>Erica tetralix</i>, <i>Calluna vulgaris</i>, <i>Schoenus nigricans</i></p>	<p><i>Erica tetralix</i> is abundant in M16. <i>Schoenus nigricans</i> is at least occasional in M14. <i>Calluna vulgaris</i> is at least occasaional in both.</p>	<p><i>E. cinerea</i> and <i>U. gallii</i> appear in transitions to drier heaths in the south-west and East Anglia.</p>

			List B <i>Eriophorum</i> spp., <i>Rhynchospora alba</i> , <i>Carex panicea</i> , <i>Drosera</i> spp., <i>Succisa</i> <i>pratensis</i> , <i>Eleocharis multicaulis</i> , <i>Ulex</i> <i>gallii</i> , <i>Calluna</i> , <i>vulgaris</i> , <i>Erica cinerea</i> , <i>Ulex gallii</i> , <i>Potentilla erecta</i> .	<i>Drosera</i> spp, <i>Eriophorum</i> spp. and <i>Erica cinerea</i> are at least occasional.	<i>Calluna</i> presents a weak growth in wetter areas.
		Vegetation Composition: rare species	Presence of: <i>Gentiana pneumonanthe</i> , <i>Lycopodiella</i> <i>inundata</i> .	Both species are present.	Rare species appear among bushes of <i>E.</i> <i>tetralix</i> and low <i>Calluna</i> . Most of them are site specific and therefore presence of any rare species should be noted on a site by site basis.
Operational feature	Criteria feature	Attributes	Measures	Targets	Comments
		Negative indicators	Record percentage cover of any of the following species when present: <i>Salix cinerea</i> <i>Betula pubescens</i> <i>Pinus</i> spp. <i>Alnus glutinosa</i>	< 5% cover trees, tree seedlings or other species of scrub.	Light grazing or occasional burning may help maintain the vegetation by setting back any invasion of woody plants. Uncontrolled burning or grazing, on the other hand, impoverishes vegetation.
Purple moor grass mire	M24 purple moor grass - meadow thistle <i>Molinia</i> <i>caerulea</i> - <i>Cirsium</i> <i>dissectum</i> fen meadow	Extent	Extent identified by NVC survey (Norfolk Wildlife Trust 2000) Extent identified for restoration to fen meadow from other semi-natural	Maintain as absolute minimum baseline extent identified by Norfolk Wildlife Trust NVC survey 2000. Extend into areas currently occupied by scrub and secondary woodland,	Extent of fen communities may be subject to some natural dynamic variation, in response to extensive grazing pressure.

			habitats in Holt Lowes Management Plan 2000-2004.	but identified for restoration to fen meadow, in Holt Lowes Management Plan 2000-2004.	
Operational feature	Criteria feature	Attributes	Measures	Targets	Comments
		Sward composition: positive indicator species	The frequency of positive indicator species from the list below to give an overall total of 2 frequent and 3 occasional. <i>Anagallis tenella, Angelica sylvestris, Cirsium dissectum, Erica tetralix, Eupatorium cannabinum, Filipendula ulmaria, Galium uliginosum/ Galium palustre, Lotus pedunculatus, Orchidaceae spp., Pedicularis sylvatica, Potentilla erecta, sedges (C. flacca, C.nigra, C.panicea), Sphagnum spp., Succisa pratensis, Valeriana dioica, Viola palustris.</i>	Overall total of at least two species/taxa are frequent plus at least three species/taxa are occasional throughout the sward. <i>Eupatorium cannabinum, Angelica sylvestris and Filipendula ulmaria</i> should be no more than occasional.	Choice of species related to NVC types, restriction to unimproved grassland and wetness characteristics of habitat, all satisfactory when inside target. Among possible species that could be used, choice further restricted by ease of identification, visibility in recording period.
		Sward composition: frequency and cover of <i>Molinia caerulea</i>	Record the frequency and % cover of <i>Molinia caerulea</i> . Record in period early June - end of August.	At least frequent throughout the sward but no more than 80% cover	<i>Molinia</i> is characteristic of the community and should be at least frequent. However, increasing cover exceeding upper target is indicative of insufficient management by grazing or cutting.

Operational feature	Criteria feature	Attributes	Measures	Targets	Comments
		*Sward composition: cover of <i>Juncus</i> spp	Record the % cover of <i>Juncus</i> species from groups A and B. Record in period early June - end of August. Group A: jointed rushes (<i>Juncus acutiflorus</i> , <i>J. articulatus</i> , <i>J. subnodulosus</i>) Group B: <i>Juncus conglomeratus</i> , <i>J. effusus</i> and <i>J. inflexus</i> .	All species combined no more than 80% cover, of which no more than 50% made up of spp. from Group B	<i>Juncus</i> spp can be characteristic components of the communities. However, increasing cover is indicative of insufficient management by grazing or cutting and/or waterlogging. Group B species may indicate problems of eutrophication when outside target .
		*Sward composition: negative indicator species.	Record the % cover of negative indicator species. Record in period early June - end of August. <i>Cirsium palustre</i> . <i>Deschampsia cespitosa</i> <i>Phragmites australis</i> <i>Salix cinerea</i> <i>Cirsium vulgare</i>	<i>Salix</i> scrub to occupy no more than 5% of overall mire area Others to occupy no more than more than 5% cover.	Invasive species outside targets shows that habitat is not being managed sufficiently eg lack of or insufficient grazing/cutting
Operational feature	Criteria feature	Attributes	Measures	Targets	Comments
		Sward structure: average	Sward height in period early June - end of August. (Upper target refers to pastures only.)	M24a Sward 5 cm or greater (excluding <i>Juncus</i> spp.) but no more than 25%	Sward height above upper target shows that habitat is not being

		height		over 60 cm	managed sufficiently eg lack of or insufficient grazing or if below lower target, is being overgrazed.
				M24b, M24c Sward 2 cm or greater (excluding <i>Juncus</i> spp.) but no more than 25% over 15 cm	
		Sward structure: litter	Cover of litter where in a more or less continuous layer, distributed either in patches or in one larger area. Record in period early June - end of August for pastures.	Total extent no more than 20% of the sward	Outside target indicates biomass removal is insufficient eg lack of or insufficient grazing or not cut for hay.
		Sward structure: bare ground	Extent of bare ground distributed through the sward, visible without disturbing the vegetation. Record in period early June - end of August.	No more than 5%	Outside target indicates problems with stock management eg poaching, supplementary feeding.



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cSAC: The Broads
SPA: Broadland
Component SSSI: Hardley Flood

Conservation objectives for the European Interest on the SSSI

The conservation objectives for the European interest on the SSSI are:

to maintain*, in favourable condition, the:

- Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior*.

to maintain*, in favourable condition, the habitats for the population of:

- Desmoulin's whorl snail (*Vertigo moulinsiana*).
- Otter (*Lutra lutra*).

to maintain*, in favourable condition, the habitats for the populations of Annex1 bird species⁺ of European importance with particular reference to:

- open water
- swamp
- fen
- reedbed
- lowland wet grassland with ditches and water bodies.

+Bittern, Marsh harrier, Hen harrier and Ruff.

to maintain*, in favourable condition, the habitats for the populations of migratory bird species⁺ of European importance with particular reference to:

- open water
- swamp

- fen
- reedbed
- lowland wet grassland with ditches and water bodies.

+Gadwall and Shoveler.

to maintain*, in favourable condition, the habitats of the populations of waterfowl that contribute to the wintering waterfowl assemblage of European importance with particular reference to:

- open water
- swamp
- wet woodland and fen and lowland wet grassland with ditches.

* maintenance implies restoration if the feature is not currently in favourable condition.

The Conservation Objectives for The Broads candidate Special Area of Conservation and Broadland Special Protection Area are, in accordance with para C 10 of PPG 9, the reasons for which the cSAC was designated and the SPA classified. The entry of 30 January 1996 on the Register of European Sites gives the reasons for which the SPA was classified.

The **Broads cSAC** and **Broadland SPA** includes land within: Alderfen Broad SSSI, Ant Broads and Marshes SSSI, Barnby Broad and Marshes SSSI, Broad Fen, Dilham SSSI, Bure Broads and Marshes SSSI, Burgh Common and Muckfleet Marshes SSSI, Calthorpe Broad SSSI, Cantley Marshes SSSI, Crostwick Marsh SSSI, Decoy Carr, Acle SSSI, Ducan's Marsh, Claxton SSSI, Geldeston Meadows SSSI, Hall Farm Fen, Hemsby SSSI, Halvergate Marshes SSSI, Hardley Flood SSSI, Limpenhoe Meadows SSSI, Ludham-Potter Heigham Marshes SSSI, Poplar Farm Meadows, Langley SSSI, Priory Meadows, Hickling SSSI, Shallam Dyke Marshes, Thurne SSSI, Smallburgh Fen SSSI, Sprat's Water and Marshes, Carlton Colville SSSI, Stanley and Alder Carrs, Aldeby SSSI, Upper Thurne Broads and Marshes SSSI, Upton Broads and Marshes SSSI and Yare Broads and Marshes SSSI.

The **Broads cSAC** additionally includes land within: Damgate Marshes, Acle SSSI and Trinity Broads SSSI.

Favourable Condition Table for Hardley Flood SSSI

The Favourable Condition Table will be used by English Nature and other relevant authorities to determine if a site is in favourable condition. Favourable condition is achieved when the targets given below are met.

The favourable condition table should inform the scope and nature of any 'appropriate assessment' under the Habitats Regulations, but an appropriate assessment will also require consideration of issues specific to the individual plan or project. The favourable condition table does not by itself provide a comprehensive basis on which to assess plans and projects as required under Regulations 20-21, 24, 48-50 and 54 - 85. The scope and content of an appropriate assessment will depend upon the location, size and significance of the proposed project. English Nature will advise on a case by case basis.

Following an appropriate assessment, competent authorities are required to ascertain the effect on the integrity of the site. The integrity of the site is defined in para C10 of PPG9 as the coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified. The determination of favourable condition is separate from the judgement of effect upon integrity. For example, there may be a time-lag between a plan or project being initiated and a consequent adverse effect upon integrity becoming manifest in the condition assessment. In such cases, a plan or project may have an adverse effect upon integrity even though the site remains in favourable condition.

Annual counts for qualifying bird species will be used by English Nature, in the context of five year peak means, together with available information on UK population and distribution trends, to assess whether the SPA is continuing to make an appropriate contribution to the Favourable Conservation Status of the species across Europe.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i> , <i>Alnion incanae</i> , <i>Salicion alvae</i>)	NVC type W6	Extent	Extent/location of stands	No loss of ancient semi-natural stands At least current area of recent semi-natural stands maintained, although their location may alter. At least the area of ancient woodland retained	* Stand loss due to natural processes eg in minimum intervention stands may be acceptable. * A high proportion of this type of woodland may be recent and hence a dynamic interchange with open wet communities may occur. * Stand destruction may occur if the understorey and ground flora are irretrievably damaged even if the canopy remains intact. * Loss = 0.5 ha or 0.5% of the stand area, whichever is the smaller. * 20% canopy cover is conventionally taken as the lower limit for an area to be considered as woodland. Stands of willow scrub may pose difficulties of definition. * Area and location of stands may be assessed remotely or by site visit.
		2. Natural processes and structural development	Age/size class variation within and between stands; presence of open space and old trees; dead wood lying on the ground; standing dead trees	* At least the current level of structural diversity maintained. * Understorey (2-5m) present over at least 20% of total stand area * Ground flora present over at least 50% of area excluding temporary pool areas	* Any changes leading to exceedance of these limits due to natural processes are likely to be acceptable. * There is generally a good structural variety in these stands although veteran trees may be under-represented because of past treatment and the unstable nature of some sites. * The ground flora may appear sparse, particularly where periodic flooding leaves areas
Semi-natural woodland					

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
			Structures associated with the hydrological regime also need to be considered.	<ul style="list-style-type: none"> * Canopy cover present over 30-90 % of stand area * Age class structure appropriate to the site, its history and management. * A minimum of 3 fallen lying trees or major branches per ha and 4 trees per ha allowed to die standing. * At least the current level of natural hydrological features should be maintained (channels, pools, periodic flooding) 	<p>of bare mud etc. Its composition may be variable (see attribute 5).</p> <ul style="list-style-type: none"> * In coppiced stands a lower canopy cover (of standards) can be accepted. * See JNCC guidance note for the sorts of age structure likely to be appropriate for different types of management regime. * Dead wood is often abundant but because there tend to be fewer big trees the size of the fallen wood is often small. Flooding may lead to local accumulations with other areas totally lacking fallen wood. * Assess this attribute by field survey. * Where possible the hydrological regime should be allowed to revert to a more natural state.
		3.Regeneration potential	Successful establishment of young stems in gaps or on the edge of a stand	<ul style="list-style-type: none"> * Signs of seedlings growing through to saplings to young trees at sufficient density to maintain canopy density over a 10 yr period (or equivalent regrowth from coppice stumps). * No planting in stands. 	<ul style="list-style-type: none"> * A proportion of gaps at any one time may develop into permanent open space; equally some current permanent open space/glades may in time regenerate to closed canopy. * Regeneration may often occur on the edges of stands rather than in gaps within it. * In coppice most of the regeneration will be as stump regrowth. See JNCC Guidance Note on likely desirable levels of regeneration. * The minimum level of regeneration to be

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
					acceptable from a nature conservation viewpoint is likely to be much less than that needed where wood production is also an objective. * Assess this attribute by walking through the wood in spring/summer.
		4. Composition	Cover of native versus non-native species (all layers) Death, destruction or replacement of native woodland species through effects of non-native fauna or external unnatural factors	* At least the current level of site-native species maintained. * At least 90% of cover in any one layer of site-native or acceptable naturalised species. * Death, destruction or replacement of native woodland species through effects of introduced fauna or other external unnatural factors not more than 10% by number or area in a five year period.	* In sites where there might be uncertainty as to what counts as site-native or as an acceptable naturalised species this must be made clear (eg the position of poplar). * Where cover in any one layer is less than 100% then the 90% target applies to the area actually covered by that layer. * Factors leading to the death or replacement of woodland species could include pollution, including eutrophication from adjacent farmland; new diseases (eg alder dieback). * Damage to species by non-native species that does not lead to their death or replacement by non woodland species (eg damage from squirrels to trees that non-the -less survive) is not necessarily unacceptable in nature conservation terms. * Excessive browsing/grazing by even native ungulates may be considered an unnatural external factor where it leads to undesirable shifts in the composition/structure of the stand, although this may be picked up by attributes 2 or 5 anyway. * Assess this attribute by a walk through the site.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		5. Species, habitats, structures characteristic of the site.	<p>Ground flora type</p> <p>Distinctive and desirable elements for a given site eg. locally uncommon species such as <i>Carex elata</i>; veteran trees or rich invertebrate assemblages.</p> <p>Patches of associated habitats and transitions eg to ash wood, open fen and open water</p>	<p>* 80% of ground flora cover referable to NVC W6 wet woodland community.</p> <p>* Distinctive elements maintained at current levels and in current locations (where appropriate).</p> <p>* Patches and transitions maintained in extent and where appropriate location.</p>	<p>* Changes leading to these targets not being met may be acceptable where this is due to natural processes.</p> <p>* Distinctive elements and patches should be marked on maps for ease of checking in the field wherever possible.</p> <p>* If there are species groups/assemblages that cannot be assessed directly on a general site visit then surrogate features should be given where possible, eg dead wood concentrations for associated invertebrates.</p>
Lake & fen	<p>Desmoulin's whorl snail</p> <p><i>Vertigo moulinsiana</i></p>	structure and composition of marginal vegetation	Length or area of stand of appropriate vegetation	The extent of suitable habitat should be maintained, compared to the extent on a baseline map, over appropriate lengths of lake margin or area of fen [length of lake margin or area of fen or swamp, and number of sample stretches to be decided locally]. Suitable vegetation will be dense, unbroken stands of <i>Glyceria maxima</i> , <i>Carex riparia</i> , <i>C. acutiformis</i> , <i>C. paniculata</i> , <i>Cladium mariscus</i> and/or sparse <i>Phragmites</i> and <i>Phalaris arundinacea</i> .	<p>It is expected that traditional and accepted river management will cause local deterioration of some stands but the aim is to ensure that habitat in appropriate condition is present at frequent intervals along a river corridor. The snail appears to be able to colonise new adjacent stands rapidly, and closely spaced, fragmented patches may provide acceptable conditions for this species.</p> <p>Habitat should be a suitable size and linked to rivers and waterways hydrologically and not separated by barriers such as mown paths.</p>

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Lake & fen		water table	1. depth below ground level; 2 & 3. vegetation indicators of drying out.	1. Water table must be close to the surface so that the ground remains squelchy all year, i.e. never drying out, so that, even in high summer, water will rise when the soil is trodden. Winter flooding is permissible. 2. Not more than 10% (occasional on the DAFOR scale) replacement of preferred dominant species by dense tall reed or by plants of drier conditions, e.g. <i>Urtica dioica</i> , <i>Epilobium hirsutum</i> , and low grasses invading the litter layer, within pre-selected stands (as selected for	<i>V. mouliniana</i> requires highly humid conditions which are met by a high water table below the stands of vegetation in which it lives. Unfavourably wet conditions can result from prolonged flooding in summer or water penning being set too high. Current research (2000-01) will refine acceptable limits and measures for soil moisture. measuring extent). 3. Not more than 10% (occasional on the DAFOR scale) replacement of tall monocotyledons by plants preferring wetter conditions, e.g. <i>Rorippa nasturtium-aquaticum</i> , <i>Apium nodiflorum</i> and <i>Berula erecta</i> .
Lake & fen		vegetation height	height of bulk of the vegetation	Average height of the stands no less than 50 cm.	<i>V. mouliniana</i> requires tall leaves on which it lives most of the year. Heavy grazing and mowing may be detrimental if it removes most taller clumps.
Lake & fen		shading by shrubs and trees (e.g. willow, alder)	proportion of habitat	Less than 10% increase in area of shade, compared to extent on the baseline map.	

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Lake & fen		water quality	Biological class - Environment Agenc's General Quality Assessment scheme. Assess every 5 years River Ecosystem Class. Assess against Environment Agency monitoring results. Suspended solids	>='b' In addition, no drop in class from exiting situation. >= RE3 In addition, no drop in class from exiting situation.	Although the snail lives out of the water, water quality may influence vegetation structure and perhaps the microflora living on the leaf surfaces where the snail feeds, and chemical quality may directly affect the snail when it is submerged during floods. Future experience and research may indicate that these variables are inapplicable to <i>V. moulinsiana</i> . No values are given for suspended solids as this pollutant has no direct influence on the condition of the habitat for moulinsiana. No monitoring targets are set for hardness but assessments for projects must take account of the snail's need for water whose hardness must not fall below value expected for the catchment.
River	Otter <i>Lutra lutra</i>	Water quality	EA scale	"Good", with no pollution incidents	Refer to Environment Agency for data
		Flow rate	Mean annual flow rate	No reduction attributable to increased abstraction.	Data from Environment Agency
		Site integrity	Total area	No reduction of fragmentation of area	
		Fish stocks	EA assessment	Fish stocks appropriate to the nutrient status of the river No significant decline in fish biomass or species diversity	Refer to Environment Agency for sample data
		Disturbance	Extent of public access to river	No significant change to river or bankside usage; no significant development	
		Bankside cover	Proportion of bank lined with trees, scrub or other thick cover	No overall permanent decrease	Some change acceptable as long as it is appropriately mitigated

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		Presence of otters	Signs of otters	Signs of otters found at least once per year	Use data from national or county surveys
All habitats: Grassland Improved, Swamp, Marginal and Inundation, Standing Water	Annex 1 species of European importance and waterfowl assemblage including migratory species of European and national importance.	Extent of habitat.	Area (ha), measured periodically (frequency to be determined).	No significant decrease from reference level.	For all habitats for all qualifying species. Methodology for assessing target to be determined. Reference level to be determined.
		Disturbance in roosting and feeding areas	Reduction or displacement of birds, measured periodically (frequency to be determined).	No significant displacement of birds attributable to human disturbance in relation to reference level.	All qualifying breeding and wintering annex 1 and migratory species. Methodology for assessing target to be determined. Reference level to be determined.
All habitats: Grassland Improved, Swamp, Marginal and Inundation, Standing Water	Annex 1 species of European importance.	Food Availability	Abundance of live mammals and birds, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of food species year round in relation to reference level.	Small-medium sized mammals (voles, mice, rabbits) and birds (pipits to ducks) are important prey in the breeding season for marsh harriers and during the winter for hen harriers. Methodology for assessing target to be determined. Reference level to be determined.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Standing water	Annex 1 species of European importance and migratory species of national importance.	Absence of obstruction to viewlines	Open terrain relatively free of obstructions (feeding, anti-predator, roosting), measured periodically (frequency to be determined).	No significant reduction in view-lines in feeding and roosting areas during the winter season.	White-fronted goose and wigeon prefer unrestricted views over 500 metres. Ruff prefer unrestricted views over 200 metres. Methodology for assessing target to be determined.
Grassland Improved	Annex 1 species of European importance.	Food Availability	Presence and abundance of soil and ground surface invertebrates, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of prey species during the winter season in relation to reference level.	Dipteran flies, beetles and earthworms are important for Ruff. Methodology for assessing target to be determined. Reference level to be determined.
Grassland Improved	Annex 1 species of European importance and migratory species of national importance.	Vegetation characteristics	Predominantly short grassland swards (feeding and roosting during the winter period), measured periodically (frequency to be determined).	Vegetation height throughout areas used for feeding and roosting during the winter season should not deviate significantly.	Ruff require a vegetation height of <10cm within roostin areas during the winter season. Wigeon require a sward height <5 cm within feeding areas during the winter season. Methodology for assessing target to be determined.
Grassland Improved	Nationally important migratory species.	Proximity of roosting areas to feeding areas	Roosting areas close to feeding areas, measured periodically (frequency to be determined).	No significant reduction in proximity of roosting areas to feeding areas during the winter season.	Wigeon require daytime feeding areas and roosting areas within c50 metres of each other. Methodology for assessing target to be determined.
Grassland Improved	Annex 1 species of European importance.	Hydrology/ Flow	Fluctuating lake margin and wet fields with surface pools, measured periodically (frequency to be determined).	No significant reduction in soggy or flooded areas during the winter season.	Ruff prefer permanently wet and flooded areas with a water depth of <3 cm. Methodology for assessing target to be determined.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Swamp, Marginal and Inundation	Annex 1 species of European importance.	Landscape	Large, unbroken expanse of emergent vegetation (nesting, feeding, concealment), measured periodically (frequency to be determined).	No significant reduction in expanse of emergent vegetation year round.	Bittern and Marsh Harrier require continuous reed over >20ha. Methodology for assessing target to be determined.
Swamp, Marginal and Inundation	Annex 1 species of European importance.	Vegetation characteristics	Pure reed stand with vigorous growth over whole area (nesting, concealment), measured periodically (frequency to be determined).	No significant reduction in extent of vigorous growth over the pure reed stand, maintained through cutting regime.	Bittern and marsh harrier require at least 30% of the reedbed uncut and the remainder not more than 6 years old with no more than 20% cut in any year. Methodology for assessing target to be determined.
Swamp, Marginal and inundation	Annex 1 species of European importance.	Water depth	Shallow water within reeds plus frequent deep pools and channels (feeding), measured periodically (frequency to be determined).	Water depth and extent of shallows within reeds should not deviate significantly with no significant reduction in the presence of deep pools and channels year round. This acknowledges the beneficial tidally fluctuating water table experienced at this site.	Bittern and marsh harrier require water throughout the reedbed of 10-30cm, and bittern also require pools 2-4m deep. Channels for bittern should be up to 2.5m deep, consisting of a deep central channel (>1.5m) and 1m deep/5m wide shallow margin on at least one side. Methodology for assessing target to be determined.
Swamp, Marginal and Inundation Standing Water	Annex 1 species of European importance.	Food Availability	Presence and abundance of fish and amphibians, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of prey species year round, in relation to reference level.	Eel, rudd, roach of 6-35cm and frogs/toads are important for Bittern. Methodology for assessing target to be determined. Reference level to be determined.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Standing Water	Migratory species of European and national importance.	Food Availability	Presence and abundance of aquatic plants, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of food species during the winter season in relation to reference level.	<p><i>Glyceria fluitans</i>, <i>Agrostis stolonifera</i>, <i>Chara</i>, <i>Potamogeton</i> and <i>Ceratophyllum spp</i> for gadwall.</p> <p><i>Scirpus</i>, <i>Eleocharis</i>, <i>Carex</i>, <i>Potamogeton</i> and <i>Glyceria</i> for shoveler.</p> <p><i>Chara</i>, <i>Nitella</i> and <i>Potamogeton spp.</i> are important for pochard and tufted duck.</p> <p><i>Chara</i>, <i>Cladophora</i>, <i>Potamogeton</i>, <i>Ruppia</i>, <i>Ranunculus</i> and <i>Elodea</i> are important for Coot.</p> <p>Methodology for assessing target to be determined. Reference level to be determined.</p>
Standing Water	Nationally important migratory species.	Food Availability	Presence and abundance of seed bearing plants, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of food species during the winter season in relation to reference level.	<p><i>Polygonum</i>, <i>Eleocharis</i>, <i>Rumex</i> and <i>Ranunculus</i> are important for Teal.</p> <p>Methodology for assessing target to be determined. Reference level to be determined.</p>
Standing Water	Migratory species of European and national importance.	Food availability	Presence and abundance of aquatic invertebrates, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of prey species during the winter season in relation to reference level.	<p>Hydrobia, crustaceans, caddisflies, diptera and beetles are important for shoveler.</p> <p>Hydrobia, flies, caddisfly, beetles and bugs are important for teal.</p> <p>Methodology for assessing target to be determined. Reference level to be determined.</p>

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Standing Water	Nationally important migratory species.	Food availability	Presence and abundance of benthic invertebrates, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of prey species during the winter season in relation to reference level.	Chironomid larvae are important for pochard. <i>Dreissena polymorpha</i> , chironomid larvae, <i>Gammarus</i> and <i>Hydrobia</i> are important for tufted duck. Methodology for assessing target to be determined. Reference level to be determined.
Standing Water	Nationally important migratory species.	Food availability	Presence and abundance of surface and benthic invertebrates, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of prey species during the winter season in relation to reference level.	<i>Mytilus</i> , <i>Dreissena polymorpha</i> and caddis-fly larvae are important for coot. Methodology for assessing target to be determined. Reference level to be determined.
Standing Water	Nationally important migratory species.	Food availability	Presence and abundance of fish, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of prey species during the winter season in relation to reference level.	Fish of 10-25 cm are important for cormorant. Fish of 3-21 cm are important for great crested grebe. Methodology for assessing target to be determined. Reference level to be determined.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Standing Water	Migratory species of European and national importance.	Water depth	Areas of shallow medium and deep water (feeding), measured periodically (frequency to be determined).	Water depths should not deviate significantly during the winter season.	<p>Cormorant require a water depth of 2-10m.</p> <p>Great crested grebe require a water depth of 1-3m.</p> <p>Gadwall require a water depth of <25cm. A kleptoparasitic relationship with Coot can allow Gadwall to potentially exploit deeper areas up to 2m in depth.</p> <p>Shoveler and teal require a water depth of <30cm.</p> <p>Coot require a water depth of 0.5-2m.</p> <p>Pochard and tufted duck require a water depth of 2-5m.</p> <p>Methodology for assessing target to be determined.</p>
Standing Water	Annex 1 species of European importance.	Water area	Large open areas of water(feeding), measured periodically (frequency to be determined).	No significant reduction in the area of open water for feeding year round.	<p>Bittern require one or more freshwater pools of >0.5ha.</p> <p>Methodology for assessing target to be determined.</p>

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Standing Water	Migratory species of national importance.	Water area	Large open areas of water(feeding, roosting), measured periodically (frequency to be determined).	No significant reduction in the area of open water for feeding and roosting during the winter season.	<p>Cormorant require one or more fresh waters of >20ha.</p> <p>Pochard require one or more fresh waters of >6ha.</p> <p>Tufted duck require one or more freshwaters of >5ha.</p> <p>Coot require one or more freshwaters of >2ha.</p> <p>Great crested grebe require one or more freshwaters of >1ha.</p> <p>Methodology for assessing target to be determined.</p>



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SPA: Breydon Water

SPA: Broadland

cSAC: The Broads

Component SSSI: Halvergate Marshes

Conservation objectives for the European Interest on the SSSI

The conservation objectives for the European interest on the SSSI are:

to maintain*, in favourable condition, the:

- Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior*.
- Natural eutrophic lakes with *Magnopotamion* or *Hydrocharition*-type vegetation.

to maintain*, in favourable condition, the habitats for the population of:

- Otter (*Lutra lutra*).

to maintain*, in favourable condition, the habitats for the populations of Annex1 bird species⁺ of European importance with particular reference to:

- lowland wet grassland with ditches and water bodies.
- fen meadow with ditches.
- reedbed.
- saltmarsh

+ Marsh harrier, Hen harrier, Bewick's swan, Whooper swan, Ruff, Avocet, Golden Plover and Common Tern

to maintain*, in favourable condition, the habitats for the populations of migratory bird

species⁺ of European importance with particular reference to:

- lowland wet grassland with ditches and water bodies.
- fen meadow with ditches.
- reedbed
- saltmarsh

+Pink-footed goose, Gadwall and Shoveler and Lapwing

to maintain*, in favourable condition, the habitats of the populations of waterfowl that contribute to the wintering waterfowl assemblage of European importance, with particular reference to,

- lowland wet grassland with ditches and water bodies
- fen meadow
- reedbed.
- saltmarsh

* maintenance implies restoration if the feature is not currently in favourable condition.

The Conservation Objectives for Breydon Water Special Protection Area, Broadland Special Protection Area and The Broads candidate Special Area of Conservation are, in accordance with para C 10 of PPG 9, the reasons for which the SPAs were classified and the cSAC was designated.

The entry of 25 August 1998 on the Register of European Sites gives those reasons for which the SPA was initially classified. The SPA has since been extended, the extended site was classified on 2 February 2000 but has not yet been registered.

The **Breydon Water SPA** includes land within: Halvergate Marshes SSSI and Breydon Water SSSI.

The **Broads cSAC** and **Broadland SPA** includes land within: Alderfen Broad SSSI, Ant Broads and Marshes SSSI, Barnby Broad and Marshes SSSI, Broad Fen, Dilham SSSI, Bure Broads and Marshes SSSI, Burgh Common and Muckfleet Marshes SSSI, Calthorpe Broad SSSI, Cantley Marshes SSSI, Crostwick Marsh SSSI, Decoy Carr, Acle SSSI, Ducan's Marsh, Claxton SSSI, Geldeston Meadows SSSI, Hall Farm Fen, Hemsby SSSI, Halvergate Marshes SSSI, Hardley Flood SSSI, Limpenhoe Meadows SSSI, Ludham-Potter Heigham Marshes SSSI, Poplar Farm Meadows, Langley SSSI, Priory Meadows, Hickling SSSI, Shallam Dyke Marshes, Thurne SSSI, Smallburgh Fen SSSI, Sprat's Water and Marshes, Carlton Colville SSSI, Stanley and Alder Carrs, Aldeby SSSI, Upper Thurne Broads and Marshes SSSI, Upton Broads and Marshes SSSI and Yare Broads and Marshes SSSI.

The **Broads cSAC** additionally includes land within: Damgate Marshes, Acle SSSI and Trinity Broads SSSI.

Favourable Condition Table for Halvergate Marshes SSSI

The Favourable Condition Table will be used by English Nature and other relevant authorities to determine if a site is in favourable condition. Favourable condition is achieved when the targets given below are met.

The favourable condition table should inform the scope and nature of any 'appropriate assessment' under the Habitats Regulations, but an appropriate assessment will also require consideration of issues specific to the individual plan or project. The favourable condition table does not by itself provide a comprehensive basis on which to assess plans and projects as required under Regulations 20-21, 24, 48-50 and 54 - 85. The scope and content of an appropriate assessment will depend upon the location, size and significance of the proposed project. English Nature will advise on a case by case basis.

Following an appropriate assessment, competent authorities are required to ascertain the effect on the integrity of the site. The integrity of the site is defined in para C10 of PPG9 as the coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified. The determination of favourable condition is separate from the judgement of effect upon integrity. For example, there may be a time-lag between a plan or project being initiated and a consequent adverse effect upon integrity becoming manifest in the condition assessment. In such cases, a plan or project may have an adverse effect upon integrity even though the site remains in favourable condition.

Annual counts for qualifying bird species will be used by English Nature, in the context of five year peak means, together with available information on UK population and distribution trends, to assess whether the SPA is continuing to make an appropriate contribution to the Favourable Conservation Status of the species across Europe.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i> , <i>Alnion incanae</i> , <i>Salicion alvae</i>)	NVC type W6	Extent	Extent/ location of stands	<p>No loss of ancient semi-natural stands</p> <p>At least current area of recent semi-natural stands maintained, although their location may alter.</p> <p>At least the area of ancient woodland retained</p>	<p>* Stand loss due to natural processes eg in minimum intervention stands may be acceptable.</p> <p>* A high proportion of this type of woodland may be recent and hence a dynamic interchange with open wet communities may occur.</p> <p>* Stand destruction may occur if the understorey and ground flora are irretrievably damaged even if the canopy remains intact.</p> <p>* Loss = 0.5 ha or 0.5% of the stand area, whichever is the smaller.</p> <p>* 20% canopy cover is conventionally taken as the lower limit for an area to be considered as woodland. Stands of willow scrub may pose difficulties of definition.</p> <p>* Area and location of stands may be assessed remotely or by site visit.</p>

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Semi-natural woodland		2. Natural processes and structural development	Age/size class variation within and between stands; presence of open space and old trees; dead wood lying on the ground; standing dead trees	<ul style="list-style-type: none"> * At least the current level of structural diversity maintained. * Understorey (2-5m) present over at least 20% of total stand area * Ground flora present over at least 50% of area excluding temporary pool areas * Canopy cover present over 30-90 % of stand area * Age class structure appropriate to the site, its history and management. * A minimum of 3 fallen lying trees or major branches per ha and 4 trees per ha allowed to die standing. * At least the current level of natural hydrological features should be maintained (channels, pools, periodic flooding) 	<ul style="list-style-type: none"> * Any changes leading to exceedance of these limits due to natural processes are likely to be acceptable. * There is generally a good structural variety in these stands although veteran trees may be under-represented because of past treatment and the unstable nature of some sites. * The ground flora may appear sparse, particularly where periodic flooding leaves areas of bare mud etc. Its composition may be variable (see attribute 5). * In coppiced stands a lower canopy cover (of standards) can be accepted. * See JNCC guidance note for the sorts of age structure likely to be appropriate for different types of management regime. * Dead wood is often abundant but because there tend to be fewer big trees the size of the fallen wood is often small. Flooding may lead to local accumulations with other areas totally lacking fallen wood. * Assess this attribute by field survey. * Where possible the hydrological regime should be allowed to revert to a more natural state.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		3.Regeneration potential	Successful establishment of young stems in gaps or on the edge of a stand	<ul style="list-style-type: none"> * Signs of seedlings growing through to saplings to young trees at sufficient density to maintain canopy density over a 10 yr period (or equivalent regrowth from coppice stumps). * No planting in stands. 	<ul style="list-style-type: none"> * A proportion of gaps at any one time may develop into permanent open space; equally some current permanent open space/glades may in time regenerate to closed canopy. * Regeneration may often occur on the edges of stands rather than in gaps within it. * In coppice most of the regeneration will be as stump regrowth. See JNCC Guidance Note on likely desirable levels of regeneration. * The minimum level of regeneration to be acceptable from a nature conservation viewpoint is likely to be much less than that needed where wood production is also an objective. * Assess this attribute by walking through the wood in spring/summer.
		4. Composition	<p>Cover of native versus non-native species (all layers)</p> <p>Death, destruction or replacement of native woodland species through effects of non-native fauna or external unnatural factors</p>	<ul style="list-style-type: none"> * At least the current level of site-native species maintained. * At least 90% of cover in any one layer of site-native or acceptable naturalised species. * Death, destruction or replacement of native woodland species through effects of introduced fauna or other external unnatural factors not more than 10% by number or area in a five year period. 	<ul style="list-style-type: none"> * In sites where there might be uncertainty as to what counts as site-native or as an acceptable naturalised species this must be made clear (eg the position of poplar). * Where cover in any one layer is less than 100% then the 90% target applies to the area actually covered by that layer. * Factors leading to the death or replacement of woodland species could include pollution, including eutrophication from adjacent farmland; new diseases (eg alder dieback). * Damage to species by non-native species that does not lead to their death or replacement by non woodland species (eg damage from squirrels to trees that non-the -less survive) is not necessarily unacceptable in nature conservation terms. * Excessive browsing/grazing by even native ungulates may be considered an unnatural external factor where it leads to undesirable shifts in the composition/structure of the stand, although this may be picked up by attributes 2 or 5 anyway. * Assess this attribute by a walk through the site.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		5. Species, habitats, structures characteristic of the site.	Ground flora type Distinctive and desirable elements for a given site eg. locally uncommon species such as <i>Carex elata</i> ; veteran trees or rich invertebrate assemblages. Patches of associated habitats and transitions eg to ash wood, open fen and open water	* 80% of ground flora cover referable to relevant NVC wet woodland community (W6) * Distinctive elements maintained at current levels and in current locations (where appropriate). * Patches and transitions maintained in extent and where appropriate location.	* Changes leading to these targets not being met may be acceptable where this is due to natural processes. * Distinctive elements and patches should be marked on maps for ease of checking in the field wherever possible. * If there are species groups/assemblages that cannot be assessed directly on a general site visit then surrogate features should be given where possible, eg dead wood concentrations for associated invertebrates.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
22.13 Natural eutrophic lakes with Magnopotamion or Hydrocharition type vegetation.	NVC types: A3 A9 A13 A4 Types '7', '8', '9' and '10' of the GB Standing Water Classification.	Extent of community.	Check extent of beds in July/August every 4 years.	Extensive beds of submerged macrophytes should be present. Maintain mixed community.	Submerged vegetation characterised by broad leaved <i>Potamogeton</i> species such as <i>Potamogeton perfoliatus</i> , <i>P. lucens</i> , <i>P. crispus</i> , <i>P. natans</i> , <i>P. x salicilifolius</i> , <i>P. coloratus</i> , <i>P. polygonifolius</i> , <i>P. gramineus</i> , <i>P. alpinus</i> and <i>Hydrocharition</i> type vegetation. <i>Hydrocharis morsus-ranae</i> is a very rare associate with the <i>Magnopotamion</i> in the UK. Its community components are present, however, mainly <i>Spirodela polyrhiza</i> , <i>Lemna minor</i> , <i>Hippuris vulgaris</i> , <i>Utricularia vulgaris</i> and <i>Apium inundatum</i> . Community should be mixed and no one species should be present above 40% level of total amount of macrophyte presence.
Standing water-ditch system		Extent of <i>Potamogeton</i> species <i>Magnopotamion</i> .	Check species presence in July/August every 4 years.	Maintain species presence of all <i>Magnopotamion</i> and fine leaved <i>Potamogetons</i> .	No one <i>Potamogeton</i> species should be present above 40% level of total amount or level of macrophyte presence (see Water Quality comment).
		Extent of nationally scarce or threatened species.	Establish population size and position of nationally scarce, rare or threatened species over a period of 3 years, on a quarterly basis; thereafter every two years in July/August.	Maintain presence of all nationally scarce, rare or threatened plant species.	Nationally scarce, rare or threatened species can vary in population size and extent due to temporal/seasonal changes in climate which affects physical variables such as water temperature.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		Water quality	Arrange for analysis of quarterly measurements of Total P for first three years; thereafter annually in July/August.	Maintain water quality particularly Total P levels. For southern systems 100 $\mu\text{g l}^{-1}$ or below, down to 65 $\mu\text{g l}^{-1}$.	The variable targets for Total P reflects the geographical range of this trophic state. The target for Total P should be set for individual SAC's and an acceptable range established. Increases in Total P suggest a need to move from annual July/August check, back to more intensive quarterly samples to verify whether change is real. Also check for cover shifts of macrophytes and dominant presence of pollution tolerant species above 40% level such as <i>Potamogeton pectinatus</i> , <i>Myriophyllum spicatum</i> and/or <i>Ceratophyllum demersum</i> .
		Water quantity	Check ditch levels during July/August.	Maintain hydrology of ditch system.	Hydrology involves not only ditch levels but flushing rates; prevent lowering or raising of ditch level through modification of outfalls. With ditch systems aim for constant high water table throughout the year Water abstraction may represent a significant issue through the reduction of ground water and flushing flows into marginal ditch systems.
		Sediment	Check for excessive growths of individual macrophytes ie above 40%.	Maintain sediment quality and quantity.	Effects of increased macrophyte growth also relates to water quality; if this is at target levels, then enrichment of sediments is an issue if broad leaved <i>Potamogeton</i> species decline and fine leaved <i>Potamogeton pectinatus</i> increases above 40% level or <i>Myriophyllum spicatum</i> / <i>Ceratophyllum demersum</i> become dominant. Introduced fish and recreational use of site might through sediment disturbance move sites out of favourable condition. Check for increases in siltation from catchment use changes or changes in sewage treatment.
River wet woodland fen	Otter <i>Lutra lutra</i>	Water quality	EA scale	"Good", with no pollution incidents	Refer to Environment Agency for data
		Flow rate	Mean annual flow rate	No reduction attributable to increased abstraction.	Data from Environment Agency

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		Site integrity	Total area	No reduction of fragmentation of area	
		Fish stocks	EA assessment	Fish stocks appropriate to the nutrient status of the river No significant decline in fish biomass or species diversity	Refer to Environment Agency for sample data
		Disturbance	Extent of public access to river	No significant change to river or bankside usage; no significant development	
		Bankside cover	Proportion of bank lined with trees, scrub or other thick cover	No overall permanent decrease	Some change acceptable as long as it is appropriately mitigated
		Presence of otters	Signs of otters	Signs of otters found at least once per year	Use data from national or county surveys
All habitats: Grassland Improved, Swamp, Marginal and Inundation, Standing Water	Annex 1 species of European importance and waterfowl assemblage including migratory species of European and national importance.	Extent of habitat.	Area (ha), measured periodically (frequency to be determined).	No significant decrease from reference level.	For all habitats for all qualifying species. Methodology for assessing target to be determined. Reference level to be determined.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		Disturbance in roosting and feeding areas	Reduction or displacement of birds, measured periodically (frequency to be determined).	No significant displacement of birds attributable to human disturbance in relation to reference level.	All qualifying breeding and wintering annex 1 and migratory species. Methodology for assessing target to be determined. Reference level to be determined.
All habitats: Grassland Improved, Swamp, Marginal and Inundation, Standing Water	Annex 1 species of European importance.	Food Availability	Abundance of live mammals and birds, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of food species year round in relation to reference level.	Small-medium sized mammals (voles, mice, rabbits) and birds (pipits to ducks) are important prey in the breeding season for marsh harriers and during the winter for hen harriers. Methodology for assessing target to be determined. Reference level to be determined.
Grassland Improved	Annex 1 species of European importance and migratory species of European and national importance.	Absence of obstruction to viewlines	Open terrain relatively free of obstructions (feeding, anti-predator, roosting), measured periodically (frequency to be determined).	No significant reduction in view-lines in feeding and roosting areas during the winter season.	Bewick's swan, whooper swan, pink-footed goose, white-fronted goose and wigeon prefer unrestricted views over 500 metres. Ruff and bean goose prefer unrestricted views over 200 metres. Methodology for assessing target to be determined.
Grassland Improved	Annex 1 species of European importance.	Food Availability	Presence and abundance of soil and ground surface invertebrates, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of prey species during the winter season in relation to reference level.	Dipteran flies, beetles and earthworms are important for Ruff. Methodology for assessing target to be determined. Reference level to be determined.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Grassland Improved	Annex 1 species of European importance and migratory species of European and national importance.	Food availability	Presence and abundance of soft leaved plants , measured periodically (frequency to be determined).	No significant reduction in presence and abundance of food species during the winter season in relation to reference level.	<p><i>Lolium perenne, Glyceria fluitans, Phleum pratense, Rorippa amphibia, Alopecurus geniculatus</i> for Bewick's swan and whooper swan.</p> <p><i>Trifolium repens, Poa pratensis</i> and <i>Alopecurus geniculatus</i> are important for pink-footed goose.</p> <p><i>Trifolium repens, Lolium perenne, Poa trivalis</i> and <i>Holcus lanatus</i> are important for white-fronted goose.</p> <p><i>Lolium, Glyceria, Agrostis</i> and <i>Alopecurus spp.</i> for wigeon.</p> <p>Methodology for assessing target to be determined. Reference level to be determined.</p>
Grassland Improved	Nationally important migratory species.	Food availability	Presence and abundance of rough and smooth meadow grasses, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of food species during the winter season in relation to reference level.	<p><i>Poa</i> spp., potatoes, sugar beat and wheat are important for bean goose.</p> <p>Methodology for assessing target to be determined. Reference level to be determined.</p>

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Grassland Improved	Annex 1 species of European importance and migratory species of European and national importance.	Vegetation characteristics	Predominantly short grassland swards (feeding and roosting during the winter period), measured periodically (frequency to be determined).	Vegetation height throughout areas used for feeding and roosting during the winter season should not deviate significantly.	<p>Bean goose require a sward height <20 cm within feeding areas during the winter season.</p> <p>Pink-footed goose and white-fronted goose require a sward height 10-20 cm within feeding areas during the winter season.</p> <p>Bewick's swan and whooper swan require a sward height <10 cm within feeding areas during the winter season.</p> <p>Ruff require a vegetation height of <10cm within roostin areas during the winter season.</p> <p>Wigeon require a sward height <5 cm within feeding areas during the winter season.</p> <p>Methodology for assessing target to be determined.</p>
Grassland Improved	Nationally important migratory species.	Proximity of roosting areas to feeding areas	Roosting areas close to feeding areas, measured periodically (frequency to be determined).	No significant reduction in proximity of roosting areas to feeding areas during the winter season.	<p>Wigeon require daytime feeding areas and roosting areas within c50 metres of each other.</p> <p>Methodology for assessing target to be determined.</p>
Grassland Improved	Annex 1 species of European importance.	Hydrology/ Flow	Wet fields with surface pools, measured periodically (frequency to be determined).	No significant reduction in soggy or flooded areas during the winter season.	<p>Bewick's swan require 25-50% of the area soggy or flooded.</p> <p>Ruff also prefer permanently wet and flooded areas with a water depth of <3 cm.</p> <p>Methodology for assessing target to be determined.</p>

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Standing Water	Annex 1 species of European importance and migratory species of European and national importance.	Food Availability	Presence and abundance of aquatic plants, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of food species during the winter season in relation to reference level.	<p><i>Potamogeton, Ceratophyllum, Zannichellia, Myriophyllum, Ranunculus and Chara spp.</i> for Bewick's and whooper swan.</p> <p><i>Glyceria fluitans, Agrostis stolonifera, Chara, Potamogeton and Ceratophyllum spp</i> for gadwall.</p> <p><i>Scirpus, Eleocharis, Carex, Potamogeton</i> and <i>Glyceria</i> for shoveler.</p> <p><i>Chara, Nitella</i> and <i>Potamogeton spp.</i> are important for pochard and tufted duck.</p> <p><i>Chara, Cladophora, Potamogeton, Ruppia, Ranunculus</i> and <i>Elodea</i> are important for Coot.</p> <p>Methodology for assessing target to be determined. Reference level to be determined.</p>
Standing Water	Nationally important migratory species.	Food Availability	Presence and abundance of seed bearing plants, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of food species during the winter season in relation to reference level.	<p><i>Polygonum, Eleocharis, Rumex</i> and <i>Ranunculus</i> are important for Teal.</p> <p>Methodology for assessing target to be determined. Reference level to be determined.</p>
Standing Water	Migratory species of European and national importance.	Food availability	Presence and abundance of aquatic invertebrates, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of prey species during the winter season in relation to reference level.	<p>Hydrobia, crustaceans, caddisflies, diptera and beetles are important for shoveler.</p> <p>Hydrobia, flies, caddisfly, beetles and bugs are important for teal.</p> <p>Methodology for assessing target to be determined. Reference level to be determined.</p>

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Standing Water	Nationally important migratory species.	Food availability	Presence and abundance benthic invertebrates, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of prey species during the winter season in relation to reference level.	Chironomid larvae are important for pochard. <i>Dreissena polymorpha</i> , chironomid larvae, <i>Gammarus</i> and <i>Hydrobia</i> are important for tufted duck. Methodology for assessing target to be determined. Reference level to be determined.
Standing Water	Nationally important migratory species.	Food availability	Presence and abundance of surface and benthic invertebrates, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of prey species during the winter season in relation to reference level.	<i>Mytilus</i> , <i>Dreissena polymorpha</i> and caddis-fly larvae are important for coot. Methodology for assessing target to be determined. Reference level to be determined.
Standing Water	Nationally important migratory species.	Food availability	Presence and abundance of fish, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of prey species during the winter season in relation to reference level.	Fish of 10-25 cm are important for cormorant. Methodology for assessing target to be determined. Reference level to be determined.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Standing Water	Annex 1 species of European importance and migratory species of European and national importance.	Water depth	Areas of shallow medium and deep water (feeding), measured periodically (frequency to be determined).	Water depths should not deviate significantly during the winter season.	<p>Cormorant require a water depth of 2-10m.</p> <p>Bewick's and whooper swan require a water depth of <1m.</p> <p>Gadwall require a water depth of <25cm. A kleptoparasitic relationship with Coot can allow Gadwall to potentially exploit deeper areas up to 2m in depth.</p> <p>Shoveler and teal require a water depth of <30cm.</p> <p>Coot require a water depth of 0.5-2m.</p> <p>Pochard and tufted duck require a water depth of 2-5m.</p> <p>Methodology for assessing target to be determined.</p>
Standing Water	Annex 1 species of European importance and migratory species of European and national importance.	Water area	Large open areas of water(feeding, roosting), measured periodically (frequency to be determined).	No significant reduction in the area of open water for feeding and roosting during the winter season.	<p>Cormorant and pink-footed goose require one or more fresh waters of >20ha.</p> <p>Bewick's and whooper swan require one or more fresh waters of >10ha.</p> <p>Pochard require one or more fresh waters of >6ha.</p> <p>Bean geese require one or more freshwaters of 3-6 ha.</p> <p>Tufted duck require one or more freshwaters of >5ha.</p> <p>Coot require one or more freshwaters of >2ha.</p> <p>Methodology for assessing target to be determined.</p>

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Standing Water	Annex 1 species of European importance.	Hydrology/ Flow	Fluctuating water levels, measured periodically (frequency to be determined).	Range of water level fluctuation providing a succession of surface water areas (feeding) during the winter season.	Ideally Bewick's and whooper swan require water levels fluctating by 5-15% per month. Methodology for assessing target to be determined.
Floodplain grazing marsh with brackish and eutrophic ditches and open water bodies. Small areas of saltmarsh and brackish reedbed	Annex 1 species of European importance and migratory species of European and national importance.	Extent of habitat.	Area (ha), measured periodically (frequency to be determined)	No significant decrease from reference level.	For all habitats for all qualifying species. Methodology for assessing target to be determined. Reference level to be determined.
		Disturbance in roosting, breeding and feeding areas	Reduction or displacement of birds, measured periodically (frequency to be determined).	No significant displacement of birds attributable to human disturbance in relation to reference level.	All qualifying breeding and wintering annex 1 and migratory species. Excessive disturbance can result in reduced food intake and/or increased energy expenditure. Methodology for assessing target to be determined. Reference level to be determined.
	Annex 1 species of European importance and migratory species of European and national importance.	Landscape	Open terrain relatively free of obstructions (feeding, anti-predator, roosting), measured periodically (frequency to be determined).	No significant reduction in view-lines in feeding and roosting areas.	Bewick's Swan, white-fronted goose, lapwing and wigeon prefer unrestricted views over 500 metres. Golden Plover, black-tailed godwit and ruff prefer unrestricted views over 200 metres. Methodology for assessing target to be determined.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
	Annex 1 species of European importance and migratory species of European and national importance.	Water depth	Shallow water (feeding), measured periodically (frequency to be determined).	Water depth should not deviate significantly.	<p>Cormorant require a water depth of 2-10m.</p> <p>Bewick's swan require a water depth of <1m.</p> <p>Shoveler require a water depth of <30cm.</p> <p>Avocet require a water depth of 3-5cm.</p> <p>Lapwing require 2-10cm over 30% of wet grassland throughout the winter.</p> <p>Ruff require a water depth of 1-3cm.</p> <p>Ditch levels should be kept at a minimum, summer pen throughout the winter and allowed to become bankful during wet periods.</p> <p>Methodology for assessing target to be determined.</p>
	Annex 1 species of European importance and migratory species of national importance.	Water area	Large open areas of water(feeding, roosting), measured periodically (frequency to be determined).	No significant reduction in the area of open water for feeding and roosting during the winter season.	<p>Cormorant require one or more fresh waters of >20ha.</p> <p>Bewick's require one or more fresh waters of >10ha.</p> <p>Methodology for assessing target to be determined.</p>
	Nationally important migratory species.	Food availability	Presence and abundance of fish, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of prey species during the winter season in relation to reference level.	<p>Fish of 10-25 cm are important for cormorant.</p> <p>Methodology for assessing target to be determined. Reference level to be determined.</p>

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
	Annex 1 species of European importance.	Food availability	Abundance of fish and crustaceans, measured periodically (frequency to be determined)	No significant reduction in presence and abundance of prey species in relation to reference level, subject to natural change.	Fish & crustaceans are important food for common tern. Reference level to be determined. Methodology for assessing target to be determined.
	Migratory species of national importance.	Food availability	Presence and abundance of aquatic invertebrates, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of prey species during the winter season in relation to reference level.	Hydrobia, crustaceans, caddisflies, diptera and beetles are important for shoveler. Methodology for assessing target to be determined. Reference level to be determined.
	Annex 1 species of European importance and migratory species of European importance.	Food availability	Abundance of soil and ground surface invertebrates, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of prey species in relation to reference level.	Earthworms, leather jackets, beetles and spiders are important for golden plover and ruff. Earthworms, leather jackets are also important for Lapwing and black-tailed godwit. Reference level to be determined. Methodology for assessing target to be determined..

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
	Annex 1 species of European importance and migratory species of national importance.	Food availability	Presence and abundance of soft leaved plants, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of food species during the winter season in relation to reference level.	<p><i>Lolium perenne</i>, <i>Glyceria fluitans</i>, <i>Phleum pratense</i>, <i>Rorippa amphibia</i>, <i>Alopecurus geniculatus</i> for Bewick's swan.</p> <p><i>Trifolium repens</i>, <i>Lolium perenne</i>, <i>Poa trivialis</i> and <i>Holcus lanatus</i> are important for white-fronted goose.</p> <p><i>Lolium</i>, <i>Glyceria</i>, <i>Agrostis</i>, <i>Puccinellia maritima</i>, <i>Salicornia</i> and <i>Alopecurus spp.</i> for wigeon.</p> <p>Methodology for assessing target to be determined. Reference level to be determined.</p>
	Annex 1 species of European importance and migratory species of European and national importance.	Food availability	Presence and abundance of aquatic and soft leaved plants, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of food species in relation to reference level.	<p><i>Potamogeton</i>, <i>Ceratophyllum</i>, <i>Zannichellia</i>, <i>Myriophyllum</i>, <i>Chara spp.</i> for Bewick's swan.</p> <p><i>Scirpus</i>, <i>Eleocharis</i>, <i>Carex</i>, <i>Potamogeton</i> and <i>Glyceria</i> for shoveler.</p> <p>Methodology for assessing target to be determined. Reference level to be determined.</p>
		Hydrology/ Flow	Wet fields with surface pools, measured periodically (frequency to be determined).	No significant reduction in soggy or flooded areas during the winter season.	<p>Bewick's swan and Lapwing require 25-50% of the area soggy or flooded.</p> <p>Ruff also prefer permanently wet and flooded areas with a water depth of <3 cm.</p> <p>Ditch water levels to be kept at a minimum of summer pen throughout the winter months and allowed to rise to bank-full in wet conditions.</p> <p>Methodology for assessing target to be determined</p>

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
	Annex 1 species of European importance.	Hydrology/ Flow	Fluctuating water levels, measured periodically (frequency to be determined).	Range of water level fluctuation providing a succession of surface water areas (feeding).	Ideally water levels fluctating by 5-15% per month for Bewick's swan. Methodology for assessing target to be determined.
	Annex 1 species of European importance and migratory species of European and national importance.	Vegetation characteristics	Predominantly short grassland swards (feeding and roosting during the winter period), measured periodically (frequency to be determined).	Vegetation height throughout areas used for feeding and roosting during the winter season should not deviate significantly.	White-fronted goose require a sward height 10-20 cm within feeding areas during the winter season. Bewick's swan and golden plover require a sward height <10 cm within feeding areas during the winter season. Ruff and Lapwing require a vegetation height of <10cm within roosting areas during the winter season. Wigeon require a sward height <5 cm within feeding areas during the winter season. Methodology for assessing target to be determined.
	Nationally important migratory species.	Proximity of roosting areas to feeding areas	Roosting areas close to feeding areas, measured periodically (frequency to be determined).	No significant reduction in proximity of roosting areas to feeding areas during the winter season.	Wigeon require daytime feeding areas and roosting areas within c50 metres of each other. Methodology for assessing target to be determined.



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cSAC: The Broads
SPA: Broadland
Component SSSI: Hall Farm Fen, Hemsby

Conservation objectives for the European Interest on the SSSI

The conservation objectives for the European interest on the SSSI are:

to maintain*, in favourable condition, the:

- Natural eutrophic lakes with *Magnopotamion* or *Hydrocharition*-type vegetation.

to maintain*, in favourable condition, the habitats for the population of:

- Otter (*Lutra lutra*).

to maintain*, in favourable condition, the habitats for the populations of Annex1 bird species⁺ of European importance with particular reference to:

- fen and fen meadow with ditches.
- lowland wet grassland with ditches.

+Bittern, Marsh harrier, Hen harrier.

to maintain*, in favourable condition, the habitats for the populations of migratory bird species⁺ of European importance with particular reference to:

- fen and fen meadow with ditches.
- lowland wet grassland with ditches.

+ Shoveler.

to maintain*, in favourable condition, the habitats of the populations of waterfowl that contribute to the wintering waterfowl assemblage of European importance, with particular reference to:

- fen
- fen meadow and lowland wet grassland with ditches.

* maintenance implies restoration if the feature is not currently in favourable condition.

The Conservation Objectives for The Broads candidate Special Area of Conservation and Broadland Special Protection Area are, in accordance with para C 10 of PPG 9, the reasons for which the cSAC was designated and the SPA classified. The entry of 30 January 1996 on the Register of European Sites gives the reasons for which the SPA was classified.

The **Broads cSAC** and **Broadland SPA** includes land within: Alderfen Broad SSSI, Ant Broads and Marshes SSSI, Barnby Broad and Marshes SSSI, Broad Fen, Dilham SSSI, Bure Broads and Marshes SSSI, Burgh Common and Muckfleet Marshes SSSI, Calthorpe Broad SSSI, Cantley Marshes SSSI, Crostwick Marsh SSSI, Decoy Carr, Acle SSSI, Ducan's Marsh, Claxton SSSI, Geldeston Meadows SSSI, Hall Farm Fen, Hemsby SSSI, Halvergate Marshes SSSI, Hardley Flood SSSI, Limpenhoe Meadows SSSI, Ludham-Potter Heigham Marshes SSSI, Poplar Farm Meadows, Langley SSSI, Priory Meadows, Hickling SSSI, Shallam Dyke Marshes, Thurne SSSI, Smallburgh Fen SSSI, Sprat's Water and Marshes, Carlton Colville SSSI, Stanley and Alder Carrs, Aldeby SSSI, Upper Thurne Broads and Marshes SSSI, Upton Broads and Marshes SSSI and Yare Broads and Marshes SSSI.

The **Broads cSAC** additionally includes land within: Damgate Marshes, Acle SSSI and Trinity Broads SSSI.

Favourable Condition Table for Hall Farm Fen, Hemsby SSSI

The Favourable Condition Table will be used by English Nature and other relevant authorities to determine if a site is in favourable condition. Favourable condition is achieved when the targets given below are met.

The favourable condition table should inform the scope and nature of any ‘appropriate assessment’ under the Habitats Regulations, but an appropriate assessment will also require consideration of issues specific to the individual plan or project. The favourable condition table does not by itself provide a comprehensive basis on which to assess plans and projects as required under Regulations 20-21, 24, 48-50 and 54 - 85. The scope and content of an appropriate assessment will depend upon the location, size and significance of the proposed project. English Nature will advise on a case by case basis.

Following an appropriate assessment, competent authorities are required to ascertain the effect on the integrity of the site. The integrity of the site is defined in para C10 of PPG9 as the coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified. The determination of favourable condition is separate from the judgement of effect upon integrity. For example, there may be a time-lag between a plan or project being initiated and a consequent adverse effect upon integrity becoming manifest in the condition assessment. In such cases, a plan or project may have an adverse effect upon integrity even though the site remains in favourable condition.

Annual counts for qualifying bird species will be used by English Nature, in the context of five year peak means, together with available information on UK population and distribution trends, to assess whether the SPA is continuing to make an appropriate contribution to the Favourable Conservation Status of the species across Europe.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
22.13 Natural eutrophic lakes with Magnopotamion or Hydrocharition type vegetation. Standing water-ditch system	NVC types: A3 A9 A13 A4 Types '7', '8', '9' and '10' of the GB Standing Water Classification.	Extent of community.	Check extent of beds in July/August every 4 years.	Extensive beds of submerged macrophytes should be present. Maintain mixed community.	Submerged vegetation characterised by broad leaved <i>Potamogeton</i> species such as <i>Potamogeton perfoliatus</i> , <i>P lucens</i> , <i>P crispus</i> , <i>P natans</i> , <i>P x salicifolius</i> , <i>P coloratus</i> , <i>P polygonifolius</i> , <i>P gramineus</i> , <i>P. alpinus</i> and <i>Hydrocharition</i> type vegetation. <i>Hydrocharis morsus-ranae</i> is a very rare associate with the <i>Magnopotamion</i> in the UK. Its community components are present, however, mainly <i>Spirodela polyrhiza</i> , <i>Lemna minor</i> , <i>Hippuris vulgaris</i> , <i>Utricularia vulgaris</i> and <i>Apium inundatum</i> . Community should be mixed and no one species should be present above 40% level of total amount of macrophyte presence.
		Extent of <i>Potamogeton</i> species <i>Magnopotamion</i> .	Check species presence in July/August every 4 years.	Maintain species presence of all <i>Magnopotamion</i> and fine leaved <i>Potamogetons</i> .	No one <i>Potamogeton</i> species should be present above 40% level of total amount or level of macrophyte presence (see Water Quality comment).
		Extent of nationally scarce or threatened species.	Establish population size and position of nationally scarce, rare or threatened species over a period of 3 years, on a quarterly basis; thereafter every two years in July/August.	Maintain presence of all nationally scarce, rare or threatened plant species.	Nationally scarce, rare or threatened species can vary in population size and extent due to temporal/seasonal changes in climate which affects physical variables such as water temperature.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		Water quality	Arrange for analysis of quarterly measurements of Total P for first three years; thereafter annually in July/August.	Maintain water quality particularly Total P levels. For southern systems $100 \mu\text{g l}^{-1}$ or below down to $65 \mu\text{g l}^{-1}$.	The variable targets for Total P reflects the geographical range of this trophic state. The target for Total P should be set for individual SAC's and an acceptable range established. Increases in Total P suggest a need to move from annual July/August check, back to more intensive quarterly samples to verify whether change is real. Also check for cover shifts of macrophytes and dominant presence of pollution tolerant species above 40% level such as <i>Potamogeton pectinatus</i> , <i>Myriophyllum spicatum</i> and/or <i>Ceratophyllum demersum</i> .
		Water quantity	Check lake levels during July/August.	Maintain hydrology of ditch system.	Hydrology involves not only ditch levels but flushing rates; prevent lowering or raising of ditch level through modification of outfalls. With ditch systems aim for constant high water table throughout the year Water abstraction may represent a significant issue through the reduction of ground water and flushing flows into marginal ditch systems.
		Sediment	Check for excessive growths of individual macrophytes ie above 40%.	Maintain sediment quality and quantity.	Effects of increased macrophyte growth also relates to water quality; if this is at target levels, then enrichment of sediments is an issue if broad leaved <i>Potamogeton</i> species decline and fine leaved <i>Potamogeton pectinatus</i> increases above 40% level or <i>Myriophyllum spicatum</i> / <i>Ceratophyllum demersum</i> become dominant. Introduced fish and recreational use of site might through sediment disturbance move sites out of favourable condition. Check for increases in siltation from catchment use changes or changes in sewage treatment.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
River	Otter <i>Lutra lutra</i>	Water quality	EA scale	"Good", with no pollution incidents	Refer to Environment Agency for data
		Flow rate	Mean annual flow rate	No reduction attributable to increased abstraction.	Data from Environment Agency
		Site integrity	Total area	No reduction of fragmentation of area	
		Fish stocks	EA assessment	Fish stocks appropriate to the nutrient status of the river No significant decline in fish biomass or species diversity	Refer to Environment Agency for sample data
		Disturbance	Extent of public access to river	No significant change to river or bankside usage; no significant development	
		Bankside cover	Proportion of bank lined with trees, scrub or other thick cover	No overall permanent decrease	Some change acceptable as long as it is appropriately mitigated
		Presence of otters	Signs of otters	Signs of otters found at least once per year	Use data from national or county surveys
All habitats: Grassland Improved, Marginal and Inundation, Standing Water	Annex 1 species of European importance and waterfowl assemblage including migratory species of European and national importance.	Extent of habitat.	Area (ha), measured periodically (frequency to be determined).	No significant decrease from reference level.	For all habitats for all qualifying species. Methodology for assessing target to be determined. Reference level to be determined.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		Disturbance in roosting and feeding areas	Reduction or displacement of birds, measured periodically (frequency to be determined).	No significant displacement of birds attributable to human disturbance in relation to reference level.	All qualifying breeding and wintering annex 1 and migratory species. Methodology for assessing target to be determined. Reference level to be determined.
All habitats: Grassland Improved, Marginal and Inundation, Standing Water	Annex 1 species of European importance.	Food Availability	Abundance of live mammals and birds, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of food species year round in relation to reference level.	Small-medium sized mammals (voles, mice, rabbits) and birds (pipits to ducks) are important prey in the breeding season for marsh harriers and during the winter for hen harriers. Methodology for assessing target to be determined. Reference level to be determined.
Swamp, Marginal and inundation	Annex 1 species of European importance.	Water depth	Shallow water within low lying fen area during winter plus frequent deep channels (feeding), measured periodically (frequency to be determined).	Water depth and extent of shallows within low lying fen area during winter should not deviate significantly with no significant reduction in the presence of deep channels year round.	Bittern require pools 2-4m deep. Channels for bittern should be up to 2.5m deep, consisting of a deep central channel (>1.5m) and 1m deep/5m wide shallow margin on at least one side. Methodology for assessing target to be determined.
Swamp, Marginal and Inundation	Annex 1 species of European importance.	Hydrology flow	Stable Water levels, measured periodically (frequency to be determined).	Water levels should not deviate significantly during the breeding season.	<10cm fluctuation is required during the breeding season for Marsh Harrier. Methodology for assessing target to be determined.
Swamp, Marginal and Inundation Standing Water	Annex 1 species of European importance.	Food Availability	Presence and abundance of fish and amphibians, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of prey species year round, in relation to reference level.	Eel, rudd, roach of 6-35cm and frogs/toads are important for Bittern. Methodology for assessing target to be determined. Reference level to be determined.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Standing Water	Migratory species of European importance.	Food Availability	Presence and abundance of aquatic plants, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of food species during the winter season in relation to reference level.	<i>Scirpus, Eleocharis, Carex, Potamogeton</i> and <i>Glyceria</i> for shoveler. Methodology for assessing target to be determined. Reference level to be determined.
Standing Water	Nationally important migratory species.	Food Availability	Presence and abundance of seed bearing plants, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of food species during the winter season in relation to reference level.	<i>Polygonum, Eleocharis, Rumex</i> and <i>Ranunculus</i> are important for Teal. Methodology for assessing target to be determined. Reference level to be determined.
Standing Water	Migratory species of European and national importance.	Food availability	Presence and abundance of aquatic invertebrates, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of prey species during the winter season in relation to reference level.	Hydrobia, crustaceans, caddisflies, diptera and beetles are important for shoveler. Hydrobia, flies, caddisfly, beetles and bugs are important for teal. Methodology for assessing target to be determined. Reference level to be determined.
Standing Water	Migratory species of European and national importance.	Water depth	Areas of shallow medium and deep water (feeding), measured periodically (frequency to be determined).	Water depths should not deviate significantly during the winter season.	Shoveler and teal require a water depth of <30cm. Methodology for assessing target to be determined.
Standing Water	Annex 1 species of European importance.	Water area	Large open areas of water(feeding) particularly during the winter, measured periodically (frequency to be determined).	No significant reduction in the area of open water for feeding year round.	Bittern require one or more freshwater pools of >0.5ha not exceeding 20% of the fen area overall. Methodology for assessing target to be determined.



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pSPA: Breckland
cSAC: Breckland
Component SSSI: Grime's Graves

Conservation objective for the European Interest on the SSSI

The conservation objectives for the European interests on the SSSI are :

to maintain*, in favourable condition, the

- European dry heaths
- Semi-natural dry grasslands and scrubland facies: on calcareous substrates (*Festuco-Brometalia*)

to maintain*, in favourable condition, the habitats for the populations of the Annex 1 bird species⁺, of European importance, with particular reference to:

- heathland
- acid grassland
- chalk grassland and/or inland dune communities

⁺ Woodlark, Nightjar

* maintenance implies restoration if the feature is not currently in favourable condition.

The Conservation Objectives for Breckland proposed Special Protection Area and Breckland candidate Special Area of Conservation are, in accordance with para C 10 of PPG 9, the reasons for which the pSPA was proposed and the SAC designated .

The Breckland cSAC and the Breckland pSPA include land within:

Barnhamcross Common SSSI	Gooderstone Warren SSSI
Berner's Heath, Icklingham SSSI	Grime's Graves SSSI
Bridgham and Brettenham Heaths SSSI	Lakenheath Warren SSSI
Cavenham - Icklingham Heaths SSSI	Stanford Training Area SSSI
Cranwich Camp SSSI	Thetford Golf Course and Marsh SSSI
Deadman's Grave, Icklingham SSSI	Thetford Heath SSSI
East Wretham Heath SSSI	Wangford Warren and Carr SSSI
Field Barn Heaths, Hilborough SSSI	Weather and Horn Heaths SSSI
Foxhole Heath, Eriswell SSSI	Weeting Heath SSSI

The Breckland cSAC also includes land within:

Maidencross Hill SSSI	RAF Lakenheath SSSI
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The Breckland pSPA also includes land within

Barnham Heath SSSI	Little Heath, Barnham SSSI
Beeches Pit, West Stow SSSI	Old Bodney Camp SSSI
Cranberry Rough, Hockham SSSI	Rex Graham Reserve SSSI
Eriswell Low Warren SSSI	Warren Hill SSSI
High Lodge, Mildenhall SSSI	West Stow Heath SSSI
How Hill Track SSSI	

The Favourable Condition Table will be used by English Nature and other relevant authorities to determine if a site is in favourable condition. Favourable condition is achieved when the targets given below are met.

The favourable condition table should inform the scope and nature of any 'appropriate assessment' under the Habitats Regulations, but an appropriate assessment will also require consideration of issues specific to the individual plan or project. The favourable condition table does not by itself provide a comprehensive basis on which to assess plans and projects as required under Regulations 20-21, 24, 48-50 and 54 - 85. The scope and content of an appropriate assessment will depend upon the location, size and significance of the proposed project. English Nature will advise on a case by case basis.

Following an appropriate assessment, competent authorities are required to ascertain the effect on the integrity of the site. The integrity of the site is defined in para C10 of PPG9 as the coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified. The determination of favourable condition is separate from the judgement of effect upon integrity. For example, there may be a time-lag between a plan or project being initiated and a consequent adverse effect upon integrity becoming manifest in the condition assessment. In such cases, a plan or project may have an adverse effect upon integrity even though the site remains in favourable condition.

Annual counts for qualifying bird species will be used by English Nature, in the context of five year peak means, together with available information on UK population and distribution trends, to assess whether the SPA is continuing to make an appropriate contribution to the Favourable Conservation Status of the species across Europe.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Dry heathland	H1	Extent	Total area (approx. 4.6ha) as mapped by Smith/ESL (1998). Measure every two years if it is possible.[In specific cases see if there is a radical difference between cSAC and SSSI baseline, in which case discuss with specialist.]	Maintain existing area and extent.	This community is confined to base-poor and oligotrophic sandy soils in the more continental lowlands of Eastern England. Large areas have been lost or fragmented to agriculture and forestry in the past.
		Bare ground	'Natural' bare ground (mineral soil) in intimate mosaic within vegetation 'Recreation' heavily used paralleling paths	'Natural' between 10-25% 'Heavily disturbed' <1%	Bryophytes and lichens are more extensive and diverse among open covers of <i>Calluna</i> . [Sandy profiles can be found in coastal and few inland dune systems, where there is, or has been, mobile sand.]
		Vegetation Structure	Record percentage of cover of <i>Calluna vulgaris</i> in different stages of its life cycle.	Cover of <i>Calluna vulgaris</i> to be between 25% minimum and 90% maximum. Mosaic with >10% young and 30-50% mature / degenerate <i>Calluna vulgaris</i> within unit. < 25% <i>Ulex europaeus</i>	<i>Calluna vulgaris</i> is often the only woody species present. Its cover and height are very variable. Grasses, when they occur, are present as scattered tussocks. <i>Ulex europaeus</i> is uncommon and restricted to disturbed areas.
		Vegetation Composition	Record frequency of any of the following species when present: List A <i>Calluna vulgaris</i> List B <i>Agrostis capillaris</i> , <i>Festuca ovina</i> , <i>Deschampsia flexuosa</i>	All species from List A must be at least frequent. At least two species of list B are at least occasional	Associated flora is for the most part confined to areas between <i>Calluna</i> clumps and the centre of collapsing bushes.
		Negative indicators	Record frequency and percentage cover of any of the following species when present: <i>Pteridium aquilinum</i> <i>Rhododendron ponticum</i> <i>Rubus</i> spp. <i>Senecio</i> spp. <i>Urtica dioica</i> <i>Pinus</i> spp.	< 50 % cover degenerate/dead <i>Calluna vulgaris</i> No <i>Rhododendron ponticum</i> < 1 % <i>Rubus</i> spp., <i>Senecio</i> spp., <i>Urtica</i>	<i>Rhododendron ponticum</i> and <i>Gaultheria shallon</i> can spread rapidly and have a negligible nature conservation value. Dense rhododendron casts deep shade which excludes other vegetation. Scrub (shrubs, trees or tree seedlings) above 1 m in height is an important component of the heathland but its cover should be stable or not increasing as a whole.

			<i>Betula</i> spp. <i>Quercus</i> spp. <i>Cirsium arvense</i> <i>Cirsium vulgare</i> <i>Deschampsia flexuosa</i>	<i>dioica</i> , <i>Cirsium</i> spp. < 5% trees, tree seedlings or other species of scrub. < 25% <i>Pteridium aquilinum</i> < 25% <i>Deschampsia flexuosa</i>	Management of bracken should be directed more to control than eradication.
			Record presence of signs of overgrazing, e.g. carpet, topiary or drumstick heather forms	No presence of signs of overgrazing.	Although lowland heathlands tend to be more under-grazed than over-grazed, localized overgrazing may occur. Management may need to be modified to tackle these situations.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Unimproved calcareous grassland	CG7b	*Extent	Total area (approx 9.4ha), as mapped by Smith/ESL (1998), in period end April-mid July.	No reduction in area and any consequent fragmentation without prior consent	Recoverable reduction = unfavourable; non-recoverable reduction = partially destroyed. Excludes bare ground associated with rabbit warrens (see below).
		*Sward composition: positive indicator species	Record the frequency of positive indicator species in period end April-mid July. <i>Aira</i> spp., <i>Aphanes</i> spp., <i>Astragalus danicus</i> , <i>Centaurium erythraea</i> , <i>Cladonia</i> spp , <i>Dianthus deltoides</i> , <i>Erigeron acer</i> , <i>Erodium cicutarium</i> , <i>Fragaria vesca</i> , <i>Galium verum</i> , <i>Helianthemum nummularium</i> , <i>Leontodon hispidus/L. saxatilis</i> , <i>Lotus corniculatus</i> , <i>Ornithopus perpusillus</i> , <i>Pilosella officinarum (Hieracium pilosella)</i> ,	At least two species/taxa frequent and four species/taxa occasional throughout the sward	Choice of species related to NVC type and restriction to unimproved grassland, considered satisfactory when inside target. Among possible species that could be used, choice further restricted by ease of identification, visibility in recording period.

			<i>Plantago coronopus</i> , <i>Rumex acetosella</i> , <i>Sedum acre</i> , <i>Teesdalia nudicaulis</i> , <i>Thymus</i> spp.		
		*Sward composition: negative indicator species	Record the frequency and % cover of negative indicator species. Record in period end April-mid July. <i>Carduus nutans</i> , <i>Chamerion angustifolium</i> , <i>Cirsium arvense</i> , <i>Cirsium vulgare</i> , <i>Plantago major</i> , <i>Urtica dioica</i> .	No species/taxa more than occasional throughout the sward or singly or together more than 5% cover	Invasive species chosen to indicate problems of eutrophication and disturbance from various sources when outside target eg poaching, stock feeding.
		*Sward composition: negative indicator species	Record the frequency and % cover of all tree and scrub species excluding <i>Juniperus communis</i> , considered together, in period end April-mid July. NB If scrub/tree species are more than occasional throughout the sward but less than 5% cover, they are soon likely to become a problem if grazing levels are not sufficient or if scrub control is not being carried out.	No more than 5% cover.	Invasive species outside target shows that habitat is not being managed sufficiently eg under-grazed.
		*Sward composition: negative indicator species	Record % cover of coarse grasses eg <i>Holcus lanatus</i> , <i>Dactylis glomerata</i> , in period end April-mid July.	No more than 10% cover	Invasive species chosen to indicate problems of eutrophication and insufficient removal of biomass eg under-grazing
		Sward composition: negative indicator species	Record frequency of <i>Senecio jacobaea</i> , in period end April-mid July.	No more than occasional throughout the sward	Frequency outside target indicates management problems eg over-grazing and trampling.
		Sward structure:	Record sward height in period end April-mid July.	Sward 5 cms or less	Outside target indicates insufficient grazing.

		average height			
		Sward structure: litter	Record cover of litter where in a more or less continuous layer, distributed either in patches or in one larger area, in period end April-mid July.	Total extent no more than 25% of the sward	Outside target indicates biomass removal is insufficient eg under-grazed.
		Sward structure: bare ground	Record extent of bare ground (not rock) distributed through the sward, visible without disturbing the vegetation, in period end April-mid July.	No more than 15% .	Outside target indicates management problems eg over-grazing.
		Sward structure: localized bare ground	Record extent of localized bare ground around rabbit warrens.	No more than 0.25 ha ie approximately 50x50 metres	Heavy rabbit grazing usually associated with type but outside target indicates rabbit grazing and disturbance levels are too high.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
All habitats; heathland, acid grassland, chalk grassland and/or inland dune communities	Annex 1 populations of European importance: nightjar, woodlark	Extent and distribution of habitat	Area, measured periodically (frequency to be determined)	No significant decrease from reference level.	Methodology for assessing target to be determined. Reference level to be determined.
	Annex 1 populations of European importance: nightjar, woodlark	Disturbance	Reduction or displacement of birds, measured periodically (frequency to be determined)	No significant reduction or displacement of birds attributable to human disturbance in relation to reference level.	Methodology for assessing target to be determined. Reference level to be determined.
	Annex 1 population of European importance: nightjar	Food availability	Abundance of night-flying insects, measured periodically (frequency to be determined).	Presence and abundance of prey species should not deviate significantly from reference level.	Moths and beetles are important for nightjar. Methodology for assessing target to be determined. Reference level to be determined.
	Annex 1 population of European importance: woodlark	Food availability	Abundance of ground-surface invertebrates, measured periodically (frequency to be determined).	Presence and abundance of prey species should not deviate from reference level.	Including e.g. spiders, weevils, caterpillars. Methodology for assessing target to be determined. Reference level to be determined.
	Annex 1 population of European	Vegetation characteristics	open ground with low vegetation (feeding), and sparse woodland / scrub cover (feeding, roosting).	No significant decrease in extent and proportions of open	Nightjar require vegetation mostly 20-60cm high with less than 50% tree/scrub cover overall. Reference level to be determined.

	importance: nightjar			ground with predominantly low vegetation (feeding), and sparse woodland / scrub cover (feeding, roosting) from reference level.	
	Annex 1 population of European importance: nightjar	Vegetation characteristics	Extent and proportions of open ground with predominantly low vegetation (feeding), bare patches (nesting), and sparse woodland / scrub cover (feeding, roosting) measured periodically (frequency to be determined).	No significant decrease in extent and proportions of open ground with predominantly low vegetation (feeding), bare patches (nesting), and sparse woodland / scrub cover (feeding, roosting) from reference level.	Nightjar require vegetation mostly of 20-60cm with frequent bare patches greater than 2m ² , 10-20% bare ground (nesting) and less than 50% tree/scrub cover overall Reference level to be determined
	Annex 1 population of European importance: woodlark	Vegetation characteristics	Extent and proportions of mix of shrub / tree cover (display), short-medium vegetation and bare ground (feeding, roosting, nesting), measured periodically (frequency to be determined).	No significant decrease in extent and proportions of mix of shrub / tree cover (display), short-medium vegetation and bare ground (feeding, roosting, nesting).	Frequent bare patches under 0.5 ha within mosaic of short (under 5cm high) to medium (10-20cm high) ground vegetation, and small clumps of shrubs or trees. Methodology for assessing target to be determined. Reference level to be determined.



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SPA: Great Yarmouth North Denes Component SSSI: Great Yarmouth North Denes

Conservation objectives for the European Interest on the SSSI

The conservation objectives for the European interest on the SSSI are:

to maintain*, in favourable condition, the habitats for the populations of Annex 1 bird species⁺ of European importance with particular reference to:

- Sand
- Gravel
- Shallow coastal waters

+ Little Tern

* maintenance implies restoration if the feature is not currently in favourable condition.

The Conservation Objectives for Great Yarmouth North Denes are, in accordance with para C 10 of PPG 9, the reasons for which the SPA was classified.

The entry of 25 August 1998 on the Register of European Sites gives those reasons for which the SPA was classified.

The draft conservation objectives for the Great Yarmouth North Denes European marine site were published by English Nature on 20 December 2000.

The Great Yarmouth North Denes SPA includes land within: Great Yarmouth North Denes SSSI and Winterton-Horsey Dunes SSSI.

Favourable Condition Table for Great Yarmouth North Denes SSSI

The Favourable Condition Table will be used by English Nature and other relevant authorities to determine if a site is in favourable condition. Favourable condition is achieved when the targets given below are met.

The favourable condition table should inform the scope and nature of any ‘appropriate assessment’ under the Habitats Regulations, but an appropriate assessment will also require consideration of issues specific to the individual plan or project. The favourable condition table does not by itself provide a comprehensive basis on which to assess plans and projects as required under Regulations 20-21, 24, 48-50 and 54 - 85. The scope and content of an appropriate assessment will depend upon the location, size and significance of the proposed project. English Nature will advise on a case by case basis.

Following an appropriate assessment, competent authorities are required to ascertain the effect on the integrity of the site. The integrity of the site is defined in para C10 of PPG9 as the coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified. The determination of favourable condition is separate from the judgement of effect upon integrity. For example, there may be a time-lag between a plan or project being initiated and a consequent adverse effect upon integrity becoming manifest in the condition assessment. In such cases, a plan or project may have an adverse effect upon integrity even though the site remains in favourable condition.

Annual counts for qualifying bird species will be used by English Nature, in the context of five year peak means, together with available information on UK population and distribution trends, to assess whether the SPA is continuing to make an appropriate contribution to the Favourable Conservation Status of the species across Europe.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Sand and Gravel and	Populations of European	Extent of habitat	Area (ha), measured periodically (frequency to be	No significant decrease from reference level,	Sand and shingle are the nesting area and shallow coastal waters are the feeding area for Little tern.

Shallow coastal waters	importance Annex 1 species: Little Tern		determined).	subject to natural change.	Methodology for assessing target to be determined.. Reference level to be determined.
		Disturbance	Reduction or displacement of birds and productivity, measured periodically (frequency to be determined).	No significant reduction in numbers, displacement or productivity of birds attributable to human disturbance in relation to reference level, subject to natural change.	The breeding success of Little terns is particularly vulnerable to disturbance and predation. Productivity (number of successfully fledged young) can also be used to monitor disturbance. Methodology for assessing target to be determined.. Reference level to be determined.
Sand and Gravel	Populations of European importance Annex 1 species: Little Tern	Vegetation characteristics	Predominantly open ground with sparse vegetation and bare surfaces (colonial nesting), measured periodically (frequency to be determined).	Vegetation cover should not deviate significantly throughout the areas used for nesting, subject to natural change.	Nesting little terns require <10% vegetation cover. Open areas of largely bare shingle are important in areas used by nesting little terns. Open ground with sparse vegetation allows unrestricted views for early detection of predators. Methodology for assessing target to be determined..
Shallow Coastal waters	Populations of European importance Annex 1 species: Little Tern	Food availability	Presence and abundance of marine fish, crustaceans, worms and molluscs, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of food species in relation to reference level, subject to natural change.	Small marine fish, crustaceans, worms and molluscs are an important food source for Little tern.s. Methodology for assessing target to be determined.. Reference level to be determined.



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pSPA: Breckland
cSAC: Breckland
Component SSSI: Gooderstone Warren

Conservation objective for the European Interest on the SSSI

The conservation objectives for the European interests on the SSSI are :

to maintain*, in favourable condition, the:

- Semi-natural dry grasslands and scrubland facies: on calcareous substrates (*Festuco-Brometalia*)

to maintain*, in favourable condition, the habitats for the populations of the Annex 1 bird species⁺, of European importance, with particular reference to:

- heathland
- acid grassland
- chalk grassland and/or inland dune communities

⁺ Stone Curlew, Nightjar

* maintenance implies restoration if the feature is not currently in favourable condition.

The Conservation Objectives for Breckland proposed Special Protection Area and Breckland candidate Special Area of Conservation are, in accordance with para C 10 of PPG 9, the reasons for which the pSPA was proposed and the SAC designated .

The Breckland cSAC and the Breckland pSPA include land within:

Barnhamcross Common SSSI	Gooderstone Warren SSSI
Berner's Heath, Icklingham SSSI	Grime's Graves SSSI
Bridgham and Brettenham Heaths SSSI	Lakenheath Warren SSSI
Cavenham - Icklingham Heaths SSSI	Stanford Training Area SSSI
Cranwich Camp SSSI	Thetford Golf Course and Marsh SSSI
Deadman's Grave, Icklingham SSSI	Thetford Heath SSSI
East Wretham Heath SSSI	Wangford Warren and Carr SSSI
Field Barn Heaths, Hilborough SSSI	Weather and Horn Heaths SSSI
Foxhole Heath, Eriswell SSSI	Weeting Heath SSSI

The Breckland cSAC also includes land within:

Maidencross Hill SSSI	RAF Lakenheath SSSI
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The Breckland pSPA also includes land within

Barnham Heath SSSI	Little Heath, Barnham SSSI
Beeches Pit, West Stow SSSI	Old Bodney Camp SSSI
Cranberry Rough, Hockham SSSI	Rex Graham Reserve SSSI
Eriswell Low Warren SSSI	Warren Hill SSSI
High Lodge, Mildenhall SSSI	West Stow Heath SSSI
How Hill Track SSSI	

The Favourable Condition Table will be used by English Nature and other relevant authorities to determine if a site is in favourable condition. Favourable condition is achieved when the targets given below are met.

The favourable condition table should inform the scope and nature of any 'appropriate assessment' under the Habitats Regulations, but an appropriate assessment will also require consideration of issues specific to the individual plan or project. The favourable condition table does not by itself provide a comprehensive basis on which to assess plans and projects as required under Regulations 20-21, 24, 48-50 and 54 - 85. The scope and content of an appropriate assessment will depend upon the location, size and significance of the proposed project. English Nature will advise on a case by case basis.

Following an appropriate assessment, competent authorities are required to ascertain the effect on the integrity of the site. The integrity of the site is defined in para C10 of PPG9 as the coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified. The determination of favourable condition is separate from the judgement of effect upon integrity. For example, there may be a time-lag between a plan or project being initiated and a consequent adverse effect upon integrity becoming manifest in the condition assessment. In such cases, a plan or project may have an adverse effect upon integrity even though the site remains in favourable condition.

Annual counts for qualifying bird species will be used by English Nature, in the context of five year peak means, together with available information on UK population and distribution trends, to assess whether the SPA is continuing to make an appropriate contribution to the Favourable Conservation Status of the species across Europe.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Unimproved calcareous grassland	CG2	*Extent	Total area (approx. 1.5ha), as mapped by Smith/ESL (1998), in period May-July.	No reduction in area and any consequent fragmentation without prior consent	Recoverable reduction = unfavourable; non-recoverable reduction = partially destroyed. Excludes bare ground associated with rabbit warrens (see below).
		*Sward composition: positive indicator species	Record the frequency of positive indicator species in period May- July. <i>Anthyllis vulneraria, Asperula cynanchica, Campanula glomerata, Cirsium acaule, Filipendula vulgaris, Gentianella spp., Helianthemum nummularium, Hippocrepis comosa, Leontodon hispidus/L. saxatilis, Leucanthemum vulgare, Linum catharticum, Lotus corniculatus, Pilosella officinarum (Hieracium pilosella), Plantago media, Polygala spp., Primula veris, Sanguisorba minor, Scabiosa columbaria, Serratula tinctoria, Succisa pratensis, Thymus spp.</i>	At least four species/taxa frequent plus at least three species/taxa occasional throughout the sward.	Choice of species related to NVC type and restriction to unimproved grassland, considered satisfactory when inside target. Among positive species that could be used, choice further restricted by ease of identification, visibility in recording period.
		*Sward composition: grass/herb ratio	Proportion of non-Graminae ("herbs"), in period May -July.	40-90%	Low proportion outside target indicates eutrophication, usually from fertilisers, or insufficient removal of biomass, leading to dominance by grasses.
		*Sward composition: negative indicator species	Record % cover of <i>Brachypodium pinnatum</i> and <i>Bromopsis erecta</i> , in period May-July.	Neither species at more than 10% cover	Outside target indicates insufficient removal of biomass eg under-grazing.
		*Sward composition: negative indicator species	Record the frequency and % cover of negative indicator species. Record in period May-July. <i>Cirsium arvense, Cirsium vulgare, Rumex crispus, Rumex obtusifolius, Senecio jacobaea, Urtica dioica.</i>	No species/taxa more than occasional throughout the sward or singly or together more than 5% cover	Invasive species chosen to indicate problems of eutrophication and disturbance from various sources when outside target eg poaching, stock feeding.
		*Sward composition: negative indicator species	Record the frequency and % cover of all tree and scrub species excluding <i>Juniperus communis</i> , considered together, in period May-July. NB If scrub/tree species are more than occasional throughout the sward but less than 5% cover, they are soon likely to become a problem if grazing levels are not sufficient or if scrub control is not being carried out.	No more than 5% cover.	Invasive species outside target shows that habitat is not being managed sufficiently eg under-grazing.
		Sward structure:	Record sward height in period May-July.	Sward 2-10 cms.	Outside target indicates insufficient grazing

		average height			over-grazing.
		Sward structure: litter	Record cover of litter where in a more or less continuous layer, distributed either in patches or in one larger area, in period May-July.	Total extent no more than 25% of the sward	Outside target indicates biomass removal is insufficient eg under-grazed.
		Sward structure: bare ground	Record extent of bare ground (not rock) distributed through the sward, visible without disturbing the vegetation, in period May-July.	No more than 10% .	Outside target indicates management problem over-grazing.
		Sward structure: localized bare ground	Record extent of localized bare ground around rabbit warrens.	No more than 0.05 ha ie approximately 20x20 metres	Outside target indicates rabbit grazing and disturbance levels are too high.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
All habitats;	Annex 1	Extent and	Area, measured periodically (frequency to be	No significant decrease	Methodology for assessing target to be deter

heathland, acid grassland, chalk grassland and/or inland dune communities	populations of European importance: stone-curlew, nightjar	distribution of habitat	determined)	from reference level.	Reference level to be determined.
	Annex 1 populations of European importance: stone-curlew, nightjar	Disturbance	Reduction or displacement of birds, measured periodically (frequency to be determined)	No significant reduction or displacement of birds attributable to human disturbance in relation to reference level.	Methodology for assessing target to be determined. Reference level to be determined.
	Annex 1 population of European importance: stone-curlew	Food availability -	Abundance of soil and dung invertebrates, measured periodically (frequency to be determined)	Presence and abundance of prey species should not deviate significantly from reference level	Including e.g. beetles, grasshoppers, flies, earthworms, snails, slugs. Methodology for assessing target to be determined. Reference level to be determined.
	Annex 1 population of European importance: nightjar	Food availability	Abundance of night-flying insects, measured periodically (frequency to be determined).	Presence and abundance of prey species should not deviate significantly from reference level.	Moths and beetles are important for nightjar Methodology for assessing target to be determined. Reference level to be determined.
	Annex 1 population of European importance: stone-curlew	Vegetation characteristics	Extent and proportions of patches of at least half-hectare with vegetation less than 2cm high and at least 10% bare ground and unrestricted views over 200m, patches of medium height vegetation for roosting, measured periodically (frequency to be	No significant decrease in extent and proportions of patches of at least half-hectare with vegetation less than	Methodology for assessing target to be determined. Reference level to be determined.

			determined).	2cm high and at least 10% bare ground and unrestricted views over 200m, patches of medium height vegetation for roosting, measured periodically; from reference level.	
	Annex 1 population of European importance: nightjar	Vegetation characteristics	open ground with low vegetation (feeding), and sparse woodland / scrub cover (feeding, roosting).	No significant decrease in extent and proportions of open ground with predominantly low vegetation (feeding), and sparse woodland / scrub cover (feeding, roosting) from reference level.	Nightjar require vegetation mostly 20-60cm with less than 50% tree/scrub cover overall. Reference level to be determined.

SLR/NS



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cSAC: The Broads
SPA: Broadland
Component SSSI: Geldeston Meadows

Conservation objectives for the European Interest on the SSSI

The conservation objectives for the European interest on the SSSI are:

to maintain*, in favourable condition, the:

- Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior*.
- Natural eutrophic lakes with *Magnopotamion* or *Hydrocharition*-type vegetation.

to maintain*, in favourable condition, the habitats for the population of:

- Desmoulin's whorl snail (*Vertigo moulinsiana*).
- Otter (*Lutra lutra*).

to maintain*, in favourable condition, the habitats for the populations of Annex1 bird species⁺ of European importance with particular reference to:

- lowland wet grassland with ditches.
- fen meadow with ditches.

+ Marsh harrier, Hen harrier.

to maintain*, in favourable condition, the habitats for the populations of migratory bird species⁺ of European importance with particular reference to:

- swamp and fen
- fen meadow with ditches and water bodies.

+ Shoveler.

to maintain*, in favourable condition, the habitats of the populations of waterfowl that contribute to the wintering waterfowl assemblage of European importance, with particular reference to:

- fen meadow and lowland wet grassland with ditches and water bodies.

* maintenance implies restoration if the feature is not currently in favourable condition.

The Conservation Objectives for The Broads candidate Special Area of Conservation and Broadland Special Protection Area are, in accordance with para C 10 of PPG 9, the reasons for which the cSAC was designated and the SPA classified. The entry of 30 January 1996 on the Register of European Sites gives the reasons for which the SPA was classified.

The **Broads cSAC** and **Broadland SPA** includes land within: Alderfen Broad SSSI, Ant Broads and Marshes SSSI, Barnby Broad and Marshes SSSI, Broad Fen, Dilham SSSI, Bure Broads and Marshes SSSI, Burgh Common and Muckfleet Marshes SSSI, Calthorpe Broad SSSI, Cantley Marshes SSSI, Crostwick Marsh SSSI, Decoy Carr, Acle SSSI, Ducan's Marsh, Claxton SSSI, Geldeston Meadows SSSI, Hall Farm Fen, Hemsby SSSI, Halvergate Marshes SSSI, Hardley Flood SSSI, Limpenhoe Meadows SSSI, Ludham-Potter Heigham Marshes SSSI, Poplar Farm Meadows, Langley SSSI, Priory Meadows, Hickling SSSI, Shallam Dyke Marshes, Thurne SSSI, Smallburgh Fen SSSI, Sprat's Water and Marshes, Carlton Colville SSSI, Stanley and Alder Carrs, Aldeby SSSI, Upper Thurne Broads and Marshes SSSI, Upton Broads and Marshes SSSI and Yare Broads and Marshes SSSI.

The **Broads cSAC** additionally includes land within: Damgate Marshes, Acle SSSI and Trinity Broads SSSI.

Favourable Condition Table for Geldeston Meadows SSSI

The Favourable Condition Table will be used by English Nature and other relevant authorities to determine if a site is in favourable condition. Favourable condition is achieved when the targets given below are met.

The favourable condition table should inform the scope and nature of any ‘appropriate assessment’ under the Habitats Regulations, but an appropriate assessment will also require consideration of issues specific to the individual plan or project. The favourable condition table does not by itself provide a comprehensive basis on which to assess plans and projects as required under Regulations 20-21, 24, 48-50 and 54 - 85. The scope and content of an appropriate assessment will depend upon the location, size and significance of the proposed project. English Nature will advise on a case by case basis.

Following an appropriate assessment, competent authorities are required to ascertain the effect on the integrity of the site. The integrity of the site is defined in para C10 of PPG9 as the coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified. The determination of favourable condition is separate from the judgement of effect upon integrity. For example, there may be a time-lag between a plan or project being initiated and a consequent adverse effect upon integrity becoming manifest in the condition assessment. In such cases, a plan or project may have an adverse effect upon integrity even though the site remains in favourable condition.

Annual counts for qualifying bird species will be used by English Nature, in the context of five year peak means, together with available information on UK population and distribution trends, to assess whether the SPA is continuing to make an appropriate contribution to the Favourable Conservation Status of the species across Europe.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i> , <i>Alnion incanae</i> , <i>Salicion alvae</i>)	NVC type W6	Extent	Extent/location of stands	<p>No loss of ancient semi-natural stands</p> <p>At least current area of recent semi-natural stands maintained, although their location may alter.</p> <p>At least the area of ancient woodland retained</p>	<p>* Stand loss due to natural processes eg in minimum intervention stands may be acceptable.</p> <p>* A high proportion of this type of woodland may be recent and hence a dynamic interchange with open wet communities may occur.</p> <p>* Stand destruction may occur if the understorey and ground flora are irretrievably damaged even if the canopy remains intact.</p> <p>* Loss = 0.5 ha or 0.5% of the stand area, whichever is the smaller.</p> <p>* 20% canopy cover is conventionally taken as the lower limit for an area to be considered as woodland. Stands of willow scrub may pose difficulties of definition.</p> <p>* Area and location of stands may be assessed remotely or by site visit.</p>
Semi-natural woodland		2. Natural processes and structural development	Age/size class variation within and between stands; presence of open space and old trees; dead wood lying on the ground; standing dead trees	<p>* At least the current level of structural diversity maintained.</p> <p>* Understorey (2-5m) present over at least 20% of total stand area</p> <p>* Ground flora present over at least 50% of area excluding temporary pool areas</p> <p>* Canopy cover present over 30-90 % of stand area</p> <p>*No more than 20% of</p>	<p>* Any changes leading to exceedance of these limits due to natural processes are likely to be acceptable.</p> <p>* There is generally a good structural variety in these stands although veteran trees may be under-represented because of past treatment and the unstable nature of some sites.</p> <p>* The ground flora may appear sparse, particularly where periodic flooding leaves areas of bare mud etc. Its composition may be variable (see attribute 5).</p> <p>* In coppiced stands a lower canopy cover (of standards) can be accepted.</p>

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
			Structures associated with the hydrological regime also need to be considered.	<p>stand coppiced and this should be located around stand margin in the form of a structured edge and glades.</p> <p>* Age class structure appropriate to the site, its history and management.</p> <p>* A minimum of 3 fallen lying trees or major branches per ha and 4 trees per ha allowed to die standing.</p> <p>* At least the current level of natural hydrological features should be maintained (channels, pools, periodic flooding)</p>	<p>* See JNCC guidance note for the sorts of age structure likely to be appropriate for different types of management regime.</p> <p>* Dead wood is often abundant but because there tend to be fewer big trees the size of the fallen wood is often small. Flooding may lead to local accumulations with other areas totally lacking fallen wood.</p> <p>* Assess this attribute by field survey.</p> <p>* Where possible the hydrological regime should be allowed to revert to a more natural state.</p>

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		3.Regeneration potential	Successful establishment of young stems in gaps or on the edge of a stand	<p>* Signs of seedlings growing through to saplings to young trees at sufficient density to maintain canopy density over a 10 yr period (or equivalent regrowth from coppice stumps).</p> <p>* No planting within the stand.</p>	<p>* A proportion of gaps at any one time may develop into permanent open space; equally some current permanent open space/glades may in time regenerate to closed canopy.</p> <p>* Regeneration may often occur on the edges of stands rather than in gaps within it.</p> <p>* In coppice most of the regeneration will be as stump regrowth. See JNCC Guidance Note on likely desirable levels of regeneration.</p> <p>* The minimum level of regeneration to be acceptable from a nature conservation viewpoint is likely to be much less than that needed where wood production is also an objective.</p> <p>* Assess this attribute by walking through the wood in spring/summer.</p>

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		4. Composition	Cover of native versus non-native species (all layers) Death, destruction or replacement of native woodland species through effects of non-native fauna or external unnatural factors	<ul style="list-style-type: none"> * At least the current level of site-native species maintained. * At least 90% of cover in any one layer of site-native or acceptable naturalised species. * Death, destruction or replacement of native woodland species through effects of introduced fauna or other external unnatural factors not more than 10% by number or area in a five year period. 	<ul style="list-style-type: none"> * In sites where there might be uncertainty as to what counts as site-native or as an acceptable naturalised species this must be made clear (eg the position of poplar). * Where cover in any one layer is less than 100% then the 90% target applies to the area actually covered by that layer. * Factors leading to the death or replacement of woodland species could include pollution, including eutrophication from adjacent farmland; new diseases (eg alder dieback). * Damage to species by non-native species that does not lead to their death or replacement by non woodland species (eg damage from squirrels to trees that non-the -less survive) is not necessarily unacceptable in nature conservation terms. * Excessive browsing/grazing by even native ungulates may be considered an unnatural external factor where it leads to undesirable shifts in the composition/structure of the stand, although this may be picked up by attributes 2 or 5 anyway. * Assess this attribute by a walk through the site.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		5. Species, habitats, structures characteristic of the site.	Ground flora type Distinctive and desirable elements for a given site eg. locally uncommon species such as <i>Carex elata</i> ; veteran trees or rich invertebrate assemblages. Patches of associated habitats and transitions eg to ash wood, open fen and open water	* 80% of ground flora cover referable to relevant NVC wet woodland community W6 * Distinctive elements maintained at current levels and in current locations (where appropriate). * Patches and transitions maintained in extent and where appropriate location.	* Changes leading to these targets not being met may be acceptable where this is due to natural processes. * Distinctive elements and patches should be marked on maps for ease of checking in the field wherever possible. * If there are species groups/assemblages that cannot be assessed directly on a general site visit then surrogate features should be given where possible, eg dead wood concentrations for associated invertebrates.
22.13 Natural eutrophic lakes with Magnopotamion or Hydrocharition type vegetation.	NVC types: A3 A9 A13 A4 Types '7', '8', '9' and '10' of the GB Standing Water Classification.	Extent of community.	Check extent of beds in July/August every 4 years.	Extensive beds of submerged macrophytes should be present. Maintain mixed community.	Submerged vegetation characterised by broad leaved <i>Potamogeton</i> species such as <i>Potamogeton perfoliatus</i> , <i>P lucens</i> , <i>P crispus</i> , <i>P natans</i> , <i>P x salicifolius</i> , <i>P coloratus</i> , <i>P polygonifolius</i> , <i>P gramineus</i> , <i>P. alpinus</i> and <i>Hydrocharition</i> type vegetation. <i>Hydrocharis morsus-ranae</i> is a very rare associate with the <i>Magnopotamion</i> in the UK. Its community components are present, however, mainly <i>Spirodela polyrhiza</i> , <i>Lemna minor</i> , <i>Hippuris vulgaris</i> , <i>Utricularia vulgaris</i> and <i>Apium inundatum</i> . Community should be mixed and no one species should be present above 40% level of total amount of macrophyte presence.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Standing water-ditch system		Extent of <i>Potamogeton</i> species <i>Magnopotamion</i> .	Check species presence in July/August every 4 years.	Maintain species presence of all <i>Magnopotamion</i> and fine leaved <i>Potamogetons</i> .	No one <i>Potamogeton</i> species should be present above 40% level of total amount or level of macrophyte presence (see Water Quality comment).
		Extent of nationally scarce or threatened species.	Establish population size and position of nationally scarce, rare or threatened species over a period of 3 years, on a quarterly basis; thereafter every two years in July/August.	Maintain presence of all nationally scarce, rare or threatened plant species.	Nationally scarce, rare or threatened species can vary in population size and extent due to temporal/seasonal changes in climate which affects physical variables such as water temperature.
		Water quality	Arrange for analysis of quarterly measurements of Total P for first three years; thereafter annually in July/August.	Maintain water quality particularly Total P levels. For southern systems 100 $\mu\text{g l}^{-1}$ or below, down to 65 $\mu\text{g l}^{-1}$.	The variable targets for Total P reflects the geographical range of this trophic state. The target for Total P should be set for individual SAC's and an acceptable range established. Increases in Total P suggest a need to move from annual July/August check, back to more intensive quarterly samples to verify whether change is real. Also check for cover shifts of macrophytes and dominant presence of pollution tolerant species above 40% level such as <i>Potamogeton pectinatus</i> , <i>Myriophyllum spicatum</i> and/or <i>Ceratophyllum demersum</i> .
		Water quantity	Check lake levels during July/August.	Maintain hydrology of ditch system.	Hydrology involves not only ditch levels but flushing rates; prevent lowering or raising of ditch level through modification of outfalls. With ditch systems aim for constant high water table throughout the year Water abstraction may represent a significant issue through the reduction of ground water and flushing flows into marginal ditch systems.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		Sediment	Check for excessive growths of individual macrophytes ie above 40%.	Maintain sediment quality and quantity.	Effects of increased macrophyte growth also relates to water quality; if this is at target levels, then enrichment of sediments is an issue if broad leaved <i>Potamogeton</i> species decline and fine leaved <i>Potamogeton pectinatus</i> increases above 40% level or <i>Myriophyllum spicatum</i> / <i>Ceratophyllum demersum</i> become dominant. Introduced fish and recreational use of site might through sediment disturbance move sites out of favourable condition. Check for increases in siltation from catchment use changes or changes in sewage treatment.
River	Otter <i>Lutra lutra</i>	Water quality	EA scale	"Good", with no pollution incidents	Refer to Environment Agency for data
		Flow rate	Mean annual flow rate	No reduction attributable to increased abstraction.	Data from Environment Agency
		Site integrity	Total area	No reduction of fragmentation of area	
		Fish stocks	EA assessment	Fish stocks appropriate to the nutrient status of the river No significant decline in fish biomass or species diversity	Refer to Environment Agency for sample data
		Disturbance	Extent of public access to river	No significant change to river or bankside usage; no significant development	
		Bankside cover	Proportion of bank lined with trees, scrub or other thick cover	No overall permanent decrease	Some change acceptable as long as it is appropriately mitigated
		Presence of otters	Signs of otters	Signs of otters found at least once per year	Use data from national or county surveys

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Rivers fens	Desmoulin's whorl snail <i>Vertigo mouliniana</i>	structure and composition of marginal vegetation	Length or area of stand of appropriate vegetation	The extent of suitable habitat should be maintained, compared to the extent on a baseline map, over appropriate lengths of river or area of fen or pool margin [length of river or area of fen or swamp, and number of sample stretches to be decided locally]. Suitable vegetation will be dense, unbroken stands of <i>Glyceria maxima</i> , <i>Carex riparia</i> , <i>C. acutiformis</i> , <i>C. paniculata</i> , <i>Cladium mariscus</i> and/or sparse <i>Phragmites</i> and <i>Phalaris arundinacea</i> .	It is expected that traditional and accepted river management will cause local deterioration of some stands but the aim is to ensure that habitat in appropriate condition is present at frequent intervals along a river corridor. The snail appears to be able to colonise new adjacent stands rapidly, and closely spaced, fragmented patches may provide acceptable conditions for this species. Habitat should be a suitable size and linked to rivers and waterways hydrologically and not separated by barriers such as mown paths.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Rivers fens		water table	1. depth below ground level; 2 & 3. vegetation indicators of drying out.	1. Water table must be close to the surface so that the ground remains squelchy all year, i.e. never drying out, so that, even in high summer, water will rise when the soil is trodden. Winter flooding is permissible. 2. Not more than 10% (occasional on the DAFOR scale) replacement of preferred dominant species by dense tall reed or by plants of drier conditions, e.g. <i>Urtica dioica</i> , <i>Epilobium hirsutum</i> , and low grasses invading the litter layer, within pre-selected stands (as selected for	<i>V. mouliinsiana</i> requires highly humid conditions which are met by a high water table below the stands of vegetation in which it lives. Unfavourably wet conditions can result from prolonged flooding in summer or water penning being set too high. Current research (2000-01) will refine acceptable limits and measures for soil moisture. measuring extent). 3. Not more than 10% (occasional on the DAFOR scale) replacement of tall monocotyledons by plants preferring wetter conditions, e.g. <i>Rorippa nasturtium-aquaticum</i> , <i>Apium nodiflorum</i> and <i>Berula erecta</i> .
Rivers fens		vegetation height	height of bulk of the vegetation	Average height of the stands no less than 50 cm.	<i>V. mouliinsiana</i> requires tall leaves on which it lives most of the year. Heavy grazing and mowing may be detrimental if it removes most taller clumps.
Rivers fens		shading by shrubs and trees (e.g. willow, alder)	proportion of habitat	Less than 10% increase in area of shade, compared to extent on the baseline map.	

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
rivers fens		water quality	Biological class - Environment Agenc's General Quality Assessment scheme. Assess every 5 years River Ecosystem Class. Assess against Environment Agency monitoring results. Suspended solides	>='b' In addition, no drop in class from exiting situation. >= RE3 In addition,no drop in class from exiting situation.	Although the snail lives out of the water, water quality may influence vegetation structure and perhaps the microflora living on the leaf surfaces where the snail feeds, and chemical quality may directly affect the snail when it is submerged during floods. Future experience and research may indicate that these variables are inapplicable to <i>V. moulinsiana</i> . No values are given for suspended solids as this pollutant has no direct influence on the condition of the habitat for moulinsiana. No monitoring targets are set for hardness but assessments for projects must take account of the snail's need for water whose hardness must not fall below value expected for the catchment.
All habitats: Grassland Improved, Swamp, Marginal and Inundation, Standing Water	Annex 1 species of European importance and waterfowl assemblage including migratory species of European and national importance.	Extent of habitat.	Area (ha), measured periodically (frequency to be determined).	No significant decrease from reference level.	For all habitats for all qualifying species. Methodology for assessing target to be determined. Reference level to be determined.
		Disturbance in roosting and feeding areas	Reduction or displacement of birds, measured periodically (frequency to be determined).	No significant displacement of birds attributable to human disturbance in relation to reference level.	All qualifing breeding and wintering annex 1 and migratory species. Methodology for assessing target to be determined. Reference level to be determined.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
All habitats: Grassland Improved, Swamp, Marginal and Inundation, Standing Water	Annex 1 species of European importance.	Food Availability	Abundance of live mammals and birds, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of food species year round in relation to reference level.	Small-medium sized mammals (voles, mice, rabbits) and birds (pipits to ducks) are important prey in the breeding season for marsh harriers and during the winter for hen harriers. Methodology for assessing target to be determined. Reference level to be determined.
Swamp, Marginal and Inundation	Annex 1 species of European importance.	Landscape	Large, unbroken expanse of emergent vegetation (nesting, feeding, concealment), measured periodically (frequency to be determined).	No significant reduction in expanse of emergent vegetation year round.	Marsh Harrier require continuous reed over >20ha. Methodology for assessing target to be determined.
Swamp, Marginal and Inundation	Annex 1 species of European importance.	Hydrology flow	Stable Water levels, measured periodically (frequency to be determined).	Water levels should not deviate significantly during the breeding season.	<10cm fluctuation is required during the breeding season for Marsh Harrier. Methodology for assessing target to be determined.
Standing Water	Migratory species of European and national importance.	Food Availability	Presence and abundance of aquatic plants, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of food species during the winter season in relation to reference level.	<i>Scirpus, Eleocharis, Carex, Potamogeton</i> and <i>Glyceria</i> for shoveler. <i>Chara, Cladophora, Potamogeton, Ruppia,</i> <i>Ranunculus</i> and <i>Elodea</i> are important for Coot. Methodology for assessing target to be determined. Reference level to be determined.
Standing Water	Nationally important migratory species.	Food Availability	Presence and abundance of seed bearing plants, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of food species during the winter season in relation to reference level.	<i>Polygonum, Eleocharis, Rumex</i> and <i>Ranunculus</i> are important for Teal. Methodology for assessing target to be determined. Reference level to be determined.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Standing Water	Migratory species of European and national importance.	Food availability	Presence and abundance of aquatic invertebrates, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of prey species during the winter season in relation to reference level.	Hydrobia, crustaceans, caddisflies, diptera and beetles are important for shoveler. Hydrobia, flies, caddisfly, beetles and bugs are important for teal. Methodology for assessing target to be determined. Reference level to be determined.
Standing Water	Nationally important migratory species.	Food availability	Presence and abundance of surface and benthic invertebrates, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of prey species during the winter season in relation to reference level.	Mytilus, Dreissena polymorpha and caddis-fly larvae are important for coot. Methodology for assessing target to be determined. Reference level to be determined.
Standing Water	Migratory species of European and national importance.	Water depth	Areas of shallow medium and deep water (feeding), measured periodically (frequency to be determined).	Water depths should not deviate significantly during the winter season.	Shoveler and teal require a water depth of <30cm. Coot require a water depth of 0.5-2m. Methodology for assessing target to be determined.
Standing Water	Migratory species of national importance.	Water area	Large open areas of water(feeding, roosting), measured periodically (frequency to be determined).	No significant reduction in the area of open water for feeding and roosting during the winter season.	Coot require one or more freshwaters of >2ha. Methodology for assessing target to be determined.



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cSAC: Norfolk Valley Fens Component SSSI: Great Cressingham Fen

Conservation objective for the European Interest on the SSSI

The conservation objectives for the European interests on the SSSI are:

to maintain*, in favourable condition, the:

- Alkaline fens
- Calcareous fens with *Cladium mariscus* and species of the *Caricion davalliana*
- *Molinia* meadows on chalk, peat, clay or silt-laden soils (*Molinion caeruleae*)

* maintenance implies restoration if the feature is not currently in favourable condition.

The Conservation Objectives for Norfolk Valley Fens candidate Special Area of Conservation are, in accordance with para C10 of PPG 9, the reasons for which the cSAC was designated. The cSAC also includes land within Badley Moor, Dereham SSSI, Booton Common SSSI, Buxton Heath SSSI, Coston Fen, Runhall SSSI, East Walton and Adcock's Common SSSI, Flordon Common SSSI, Foulden Common SSSI, Holt Lowes SSSI, Potter and Scarning Fens SSSI, Sheringham and Beeston Regis Common SSSI, Southrepps Common SSSI, Swangey Fen, Attleborough SSSI and Thompson Water, Carr and Common SSSI.

The favourable condition table will be used by English Nature to determine favourable condition and other relevant authorities to determine if a site is in favourable condition. Favourable condition is achieved when when the targets set out below are met.

The favourable condition table should inform the scope and nature of any 'appropriate assessment' under the Habitats Regulations, but an appropriate assessment will also require consideration of issues specific to the individual plan or project. The favourable condition table does not by itself provide a comprehensive basis on which to assess plans or projects as required under Regulations 20-21, 24, 48-50 and 54-85. The scope and content of an appropriate assessment will depend upon the location, size and significance of the proposed project. English Nature will advise on a case by case basis.

Following an appropriate assessment, competent authorities are required to ascertain the effect on the integrity of the site. The integrity of the site is defined in para. C10 of PPG9 as 'the coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified. The determination of favourable condition is separate from the judgement of effect upon integrity. For example, there may be a time lag between a plan or project being initiated and a consequent adverse effect upon integrity being manifest in the condition assessment. In such cases, a plan or project may have an adverse effect upon integrity even though the site remains in favourable condition.

Operational feature	Criteria feature	Attributes	Measures	Targets	Comments
Spring and seepage-fed chalk-rich alkaline valley fen	M13 black bog rush - blunt flowered rush <i>Schoenus nigricans</i> - <i>Juncus subnodulosus</i> fen.	Extent	Extent identified in Norfolk Valley Fen NVC survey (Smart 1992-93)	Maintain as minimum baseline the overall area and extent identified by Smart (1992-93).	Extent of fen communities may be subject to some natural dynamic variation, in response to extensive grazing regimes.
		Water quantity and quality	High piezometric head and permanently high water table (allowing for natural seasonal fluctuations) The spring water has low fertility and is rich in base ions.	Summer water levels (July-September) to fall no more than 10 cm below the surface.	
		Vegetation structure	Presence of varied sward structure with full range of vegetation heights, from close cropped to tall and ungrazed. Includes varying degrees of tussock height. Always includes elements of short pioneer fen vegetation	At height of summer (July-August), fen vegetation to be typically no more than 0.5 metres tall, with random mosaic of differing vegetation and tussock heights across whole fen area.	As with extent, likely to be influenced by grazing regime, with vegetation responding to variable grazing pressure over time.
		Vegetation composition	Brown moss <i>Sphagnum spp.</i> carpets List A: <i>Schoenus nigricans</i> <i>Juncus subnodulosus</i> List B: <i>Pinguicula vulgaris</i> <i>Parnassia palustris</i> <i>Anagallis tenella</i> <i>Epipactis palustris</i>	Low growing brown moss carpets to occupy between 5 and 15% of overall fen area. Both species in list A to be at least frequent. All species in list B to be at least occasional.	
Operational feature	Criteria feature	Attributes	Measures	Targets	Comments
		Negative indicators	<i>Phragmites australis</i> <i>Urtica dioica</i> <i>Salix cinerea</i> <i>Epilobium hirsutum</i> <i>Eupatorium cannabinum</i> <i>Filipendula ulmaria</i>	Clumps of <i>Salix cinerea</i> to occupy no more than 5% of the overall fen area. All other species listed to be no more than rare in the overall fen area.	

Purple moor grass mire	M24 purple moor grass - meadow thistle <i>Molinia caerulea</i> - <i>Cirsium dissectum</i> fen meadow	Extent	Extent identified in Norfolk Valley Fen NVC survey (Smart 1992-93)	Maintain as minimum baseline the overall area and extent identified by by Smart (1992-93).	Extent of fen communities may be subject to some natural dynamic variation, in response to extensive grazing regime.
		Sward composition: positive indicator species	The frequency of positive indicator species from the list below to give an overall total of 2 frequent and 3 occasional. <i>Angelica sylvestris, Eupatorium cannabinum, Filipendula ulmaria, Galium uliginosum/ Galium palustre, Lotus pedunculatus, Orchidaceae spp., Pedicularis sylvatica, Potentilla erecta, sedges (C. flacca, C.nigra,C.panicea), Sphagnum spp., Succisa pratensis, Valeriana dioica, Viola palustris.</i>	Overall total of at least two species/taxa are frequent plus at least three species/taxa are occasional throughout the sward. <i>Eupatorium cannabinum, Angelica sylvestris</i> and <i>Filipendula ulmaria</i> should be no more than occasional.	Choice of species related to NVC types, restriction to unimproved grassland and wetness characteristics of habitat, all satisfactory when inside target. Among possible species that could be used, choice further restricted by ease of identification, visibility in recording period.
Operational feature	Criteria feature	Attributes	Measures	Targets	Comments
		Sward composition: frequency and cover of <i>Molinia caerulea</i>	Record the frequency and % cover of <i>Molinia caerulea</i> . Record in period early June - end of August.	At least frequent throughout the sward but no more than 80% cover	<i>Molinia</i> is characteristic of the community and should be at least frequent. However, increasing cover exceeding upper target is indicative of insufficient management by grazing or cutting.
		*Sward composition: cover of <i>Juncus</i> spp	Record the % cover of <i>Juncus</i> species from groups A and B. Record in period early June - end of August. Group A: jointed rushes (<i>Juncus acutiflorus, J. articulatus, J.</i>	All species combined no more than 80% cover, of which no more than 50% made up of spp. from Group B	<i>Juncus</i> spp can be characteristic components of the communities. However, increasing cover is indicative of insufficient management by grazing or cutting

			<i>subnodulosus)</i> Group B: <i>Juncus conglomeratus</i> , <i>J. effusus</i> and <i>J. inflexus</i> .		and/or waterlogging. Group B species may indicate problems of eutrophication when outside target .
		*Sward composition: negative indicator species.	Record the % cover of negative indicator species. Record in period early June - end of August. <i>Cirsium palustre.</i> <i>Deschampsia cespitosa</i> <i>Phragmites australis</i> <i>Salix cinerea</i> <i>Cirsium vulgare</i>	Species should be no more than occasional throughout the sward.	Invasive species outside targets shows that habitat is not being managed sufficiently eg lack of or insufficient grazing/cutting
Operational feature	Criteria feature	Attributes	Measures	Targets	Comments
		Sward structure: average height	Sward height in period early June - end of August. (Upper target refers to pastures only.)	M24a Sward 5 cm or greater (excluding <i>Juncus</i> spp.) but no more than 25% over 60 cm M24b, M24c Sward 2 cm or greater (excluding <i>Juncus</i> spp.) but no more than 25% over 15 cm	Sward height above upper target shows that habitat is not being managed sufficiently eg lack of or insufficient grazing or if below lower target, is being overgrazed.
		Sward structure: litter	Cover of litter where in a more or less continuous layer, distributed either in patches or in one larger area. Record in period early June - end of August for pastures.	Total extent no more than 20% of the sward	Some tall vegetation is fine, although outside target indicates biomass removal is insufficient eg lack of or insufficient grazing or not cut for hay.
		Sward structure: bare ground	Extent of bare ground distributed through the sward, visible without disturbing the vegetation. Record in period early June - end of August.	No more than 5%	Outside target indicates problems with stock management eg poaching, supplementary feeding.
Stands of reed and tall herb	S25 common reed - hemp agrimony with	Extent	Extent identified in Norfolk Valley Fen NVC survey (Smart	Maintain as an absolute minimum baseline the overall	

fen rich in Cladium mariscus	great fen sedge <i>Cladium mariscus</i> - <i>Eupatorium cannabinum</i> (<i>Cladium mariscus</i> sub community) swamp		1992-93)	area and extent identified by by Smart (1992-93).	
Operational feature	Criteria feature	Attributes	Measures	Targets	Comments
		Water quality and quantity	Base-rich, low fertility supply of groundwater. High piezometric head and permanently high water table (allowing for natural seasonal fluctuations)	No significant reduction in the flux of groundwater flowing to these communities. Allowing for natural seasonal variation, water table to drop no more than 20cm below ground level in summer.	These swamp communities can be adversely affected by excessive enrichment
		Vegetation structure	% cover of tall vegetation dominated by common reed, hemp agrimony and great fen sedge.	Tall <i>Phragmites</i> dominated swamp, not less than 0.5 metres high, to occupy no less than 80% of the overall swamp area.	
		Vegetation composition	List A: <i>Cladium mariscus</i> <i>Phragmites australis</i> List B: <i>Caltha palustris</i> <i>Manyanthes trifoliata</i> <i>Potentilla palustris</i> <i>Mentha aquatica</i>	<i>Phragmites australis</i> to be at least frequent. <i>Cladium mariscus</i> to be at least occasional Any two from list B to be at least occasional.	
		Negative indicators	Encroaching <i>Salix cinerea</i> <i>Urtica dioica</i> <i>Rubus spp.</i>	<i>Salix</i> scrub to occupy no more than 10% of the overall swamp area	Encroaching negative species may indicate either drying out or insufficient management.



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pSPA: Breckland
cSAC: Breckland
Component SSSI: Foxhole Heath, Eriswell

Conservation objective for the European Interest on the SSSI

The conservation objectives for the European interests on the SSSI are :

to maintain*, in favourable condition, the:

- Semi-natural dry grasslands and scrubland facies: on calcareous substrates (*Festuco-Brometalia*)

to maintain*, in favourable condition, the habitats for the populations of the Annex 1 bird species⁺, of European importance, with particular reference to:

- heathland
- acid grassland
- chalk grassland and/or inland dune communities

⁺ Woodlark, Stone Curlew

* maintenance implies restoration if the feature is not currently in favourable condition.

The Conservation Objectives for Breckland proposed Special Protection Area and Breckland candidate Special Area of Conservation are, in accordance with para C 10 of PPG 9, the reasons for which the pSPA was proposed and the SAC designated .

The Breckland cSAC and the Breckland pSPA include land within:

Barnhamcross Common SSSI	Gooderstone Warren SSSI
Berner's Heath, Icklingham SSSI	Grime's Graves SSSI
Bridgham and Brettenham Heaths SSSI	Lakenheath Warren SSSI
Cavenham - Icklingham Heaths SSSI	Stanford Training Area SSSI
Cranwich Camp SSSI	Thetford Golf Course and Marsh SSSI
Deadman's Grave, Icklingham SSSI	Thetford Heath SSSI
East Wretham Heath SSSI	Wangford Warren and Carr SSSI
Field Barn Heaths, Hilborough SSSI	Weather and Horn Heaths SSSI
Foxhole Heath, Eriswell SSSI	Weeting Heath SSSI

The Breckland cSAC also includes land within:

Maidencross Hill SSSI	RAF Lakenheath SSSI
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The Breckland pSPA also includes land within

Barnham Heath SSSI	Little Heath, Barnham SSSI
Beeches Pit, West Stow SSSI	Old Bodney Camp SSSI
Cranberry Rough, Hockham SSSI	Rex Graham Reserve SSSI
Eriswell Low Warren SSSI	Warren Hill SSSI
High Lodge, Mildenhall SSSI	West Stow Heath SSSI
How Hill Track SSSI	

The Favourable Condition Table will be used by English Nature and other relevant authorities to determine if a site is in favourable condition. Favourable condition is achieved when the targets given below are met.

The favourable condition table should inform the scope and nature of any 'appropriate assessment' under the Habitats Regulations, but an appropriate assessment will also require consideration of issues specific to the individual plan or project. The favourable condition table does not by itself provide a comprehensive basis on which to assess plans and projects as required under Regulations 20-21, 24, 48-50 and 54 - 85. The scope and content of an appropriate assessment will depend upon the location, size and significance of the proposed project. English Nature will advise on a case by case basis.

Following an appropriate assessment, competent authorities are required to ascertain the effect on the integrity of the site. The integrity of the site is defined in para C10 of PPG9 as the coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified. The determination of favourable condition is separate from the judgement of effect upon integrity. For example, there may be a time-lag between a plan or project being initiated and a consequent adverse effect upon integrity becoming manifest in the condition assessment. In such cases, a plan or project may have an adverse effect upon integrity even though the site remains in favourable condition.

Annual counts for qualifying bird species will be used by English Nature, in the context of five year peak means, together with available information on UK population and distribution trends, to assess whether the SPA is continuing to make an appropriate contribution to the Favourable Conservation Status of the species across Europe.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Unimproved calcareous grassland	CG7b	*Extent	Total area (approx. 27ha), as mapped by Moore (1991), in period end April-mid July.	No reduction in area and any consequent fragmentation without prior consent	Recoverable reduction = unfavourable; non recoverable reduction = partially destroyed. Excludes bare ground associated with rabbit warrens (see below).
		*Sward composition: positive indicator species	Record the frequency of positive indicator species in period end April-mid July. <i>Aira</i> spp., <i>Aphanes</i> spp., <i>Astragalus danicus</i> , <i>Centaureum erythraea</i> , <i>Cladonia</i> spp, <i>Dianthus deltoides</i> , <i>Erigeron acer</i> , <i>Erodium cicutarium</i> , <i>Fragaria vesca</i> , <i>Galium verum</i> , <i>Helianthemum nummularium</i> , <i>Leontodon hispidus/L. saxatilis</i> , <i>Lotus corniculatus</i> , <i>Ornithopus perpusillus</i> , <i>Pilosella officinarum (Hieracium pilosella)</i> , <i>Plantago coronopus</i> , <i>Rumex acetosella</i> , <i>Sedum acre</i> , <i>Teesdalia nudicaulis</i> , <i>Thymus</i> spp.	At least two species/taxa frequent and four species/taxa occasional throughout the sward	Choice of species related to NVC type and restriction to unimproved grassland, considered satisfactory when inside target. Among possible species that could be used, choice further restricted by ease of identification, visibility in recording period.
		*Sward composition: negative indicator species	Record the frequency and % cover of negative indicator species. Record in period end April-mid July. <i>Carduus nutans</i> , <i>Chamerion angustifolium</i> , <i>Cirsium arvense</i> , <i>Cirsium vulgare</i> , <i>Plantago major</i> , <i>Urtica dioica</i> .	No species/taxa more than occasional throughout the sward or singly or together more than 5% cover	Invasive species chosen to indicate problem of eutrophication and disturbance from various sources when outside target eg poaching, stock feeding.
		*Sward composition: negative indicator species	Record the frequency and % cover of all tree and scrub species excluding <i>Juniperus communis</i> , considered together, in period end April-mid July. NB If scrub/tree species are more than occasional throughout the sward but less than 5% cover, they are soon likely to become a problem if grazing levels are not sufficient or if scrub control is not being carried out.	No more than 5% cover.	Invasive species outside target shows that habitat is not being managed sufficiently eg under-grazed.
		*Sward composition: negative indicator species	Record % cover of coarse grasses eg <i>Holcus lanatus</i> , <i>Dactylis glomerata</i> , in period end April-mid July.	No more than 10% cover	Invasive species chosen to indicate problem of eutrophication and insufficient removal of biomass eg under-grazing
		Sward composition: negative indicator	Record frequency of <i>Senecio jacobaea</i> , in period end April-mid July.	No more than occasional throughout the sward	Frequency outside target indicates management problems eg over-grazing and trampling.

		species			
		Sward structure: average height	Record sward height in period end April-mid July.	Sward 5 cms or less	Outside target indicates insufficient grazing
		Sward structure: litter	Record cover of litter where in a more or less continuous layer, distributed either in patches or in one larger area, in period end April-mid July.	Total extent no more than 25% of the sward	Outside target indicates biomass removal is insufficient eg under-grazed.
		Sward structure: bare ground	Record extent of bare ground (not rock) distributed through the sward, visible without disturbing the vegetation, in period end April-mid July.	No more than 15% .	Outside target indicates management problem eg over-grazing.
		Sward structure: localized bare ground	Record extent of localized bare ground around rabbit warrens.	No more than 0.25 ha ie approximately 50x50 metres	Heavy rabbit grazing usually associated with this type but outside target indicates rabbit grazing and disturbance levels are too high.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
All habitats; heathland, acid grassland, chalk grassland and/or inland dune communities	Annex 1 populations of European importance: stone-curlew, woodlark	Extent and distribution of habitat	Area, measured periodically (frequency to be determined)	No significant decrease from reference level.	Methodology for assessing target to be determined. Reference level to be determined.
	Annex 1 populations of	Disturbance	Reduction or displacement of birds, measured periodically (frequency to be determined)	No significant reduction or	Methodology for assessing target to be determined. Reference level to be determined.

	European importance: stone-curlew, woodlark			displacement of birds attributable to human disturbance in relation to reference level.	
	Annex 1 population of European importance: stone-curlew	Food availability -	Abundance of soil and dung invertebrates, measured periodically (frequency to be determined)	Presence and abundance of prey species should not deviate significantly from reference level	Including e.g. beetles, grasshoppers, flies, earthworms, snails, slugs. Methodology for assessing target to be determined. Reference level to be determined.
	Annex 1 population of European importance: woodlark	Food availability	Abundance of ground-surface invertebrates, measured periodically (frequency to be determined).	Presence and abundance of prey species should not deviate from reference level.	Including e.g. spiders, weevils, caterpillars. Methodology for assessing target to be determined. Reference level to be determined.
	Annex 1 population of European importance: stone-curlew	Vegetation characteristics	Extent and proportions of patches of at least half-hectare with vegetation less than 2cm high and at least 10% bare ground and unrestricted views over 200m, patches of medium height vegetation for roosting, measured periodically (frequency to be determined).	No significant decrease in extent and proportions of patches of at least half-hectare with vegetation less than 2cm high and at least 10% bare ground and unrestricted views over 200m, patches of medium height vegetation for roosting, measured periodically; from reference level.	Methodology for assessing target to be determined. Reference level to be determined.
	Annex 1 population of European importance: woodlark	Vegetation characteristics	Extent and proportions of mix of shrub / tree cover (display), short-medium vegetation and bare ground (feeding, roosting, nesting), measured periodically (frequency to be determined).	No significant decrease in extent and proportions of mix of shrub / tree cover (display), short-medium vegetation and bare ground (feeding, roosting, nesting).	Frequent bare patches under 0.5 ha within mosaic of short (under 5cm high) to medium (10-20cm high) ground vegetation, and small clumps of shrubs or trees. Methodology for assessing target to be determined. Reference level to be determined.

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cSAC: Norfolk Valley Fens Component SSSI: Foulden Common

Conservation objective for the European Interest on the SSSI

The conservation objectives for the European interests on the SSSI are:

to maintain*, in favourable condition, the:

- Alkaline fens
- Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion*, *Alnion incanae*, *Salicion alvae*)
- Calcareous fens with *Cladium mariscus* and species of the *Caricion davalliana*
- *Molinia* meadows on chalk, peat, clayey or silt-laden soils (*Molinion caeruleae*)
- Semi-natural dry grasslands and scrublands facies: on calcareous substrates (*Festuco-Brometalia*)

* maintenance implies restoration if the feature is not currently in favourable condition.

The Conservation Objectives for Norfolk Valley Fens candidate Special Area of Conservation are, in accordance with para C10 of PPG 9, the reasons for which the cSAC was designated. The cSAC also includes land within Badley Moor, Dereham SSSI, Booton Common SSSI, Buxton Heath SSSI, Coston Fen, Runhall SSSI, East Walton and Adcock's Common SSSI, Flordon Common SSSI, Great Cressingham Fen SSSI, Holt Lowes SSSI, Potter and Scarning Fens SSSI, Sheringham and Beeston Regis Common SSSI, Southrepps Common SSSI, Swangey Fen, Attleborough SSSI and Thompson Water, Carr and Common SSSI.

The favourable condition table will be used by English Nature to determine favourable condition and other relevant authorities to determine if a site is in favourable condition. Favourable condition is achieved when the targets set out below are met.

The favourable condition table should inform the scope and nature of any 'appropriate assessment' under the Habitats Regulations, but an appropriate assessment will also require consideration of issues specific to the individual plan or project. The favourable condition table does not by itself provide a comprehensive basis on which to assess plans or projects as required under Regulations 20-21, 24, 48-50 and 54-85. The scope and content of an appropriate assessment will depend upon the location, size and significance of the proposed project. English Nature will advise on a case by case basis.

Following an appropriate assessment, competent authorities are required to ascertain the effect on the integrity of the site. The integrity of the site is defined in para. C10 of PPG9 as 'the coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified. The determination of favourable condition is separate from the judgement of effect upon integrity. For example, there may be a time lag between a plan or project being initiated and a consequent adverse effect upon integrity being manifest in the condition assessment. In such cases, a plan or project may have an adverse effect upon integrity even though the site remains in favourable condition.

Operational feature	Criteria feature	Attributes	Measures	Targets	Comments
Spring and seepage-fed chalk-rich alkaline valley fen	M13 black bog rush - blunt flowered rush <i>Schoenus nigricans</i> - <i>Juncus subnodulosus</i> fen.	Extent	Extent identified in Norfolk Valley Fen NVC survey (Smart 1992-93)	Maintain as an absolute minimum baseline the overall area and extent identified by Smart (1992-93).	Extent of fen communities may be subject to some natural dynamic variation, in response to extensive grazing pressure.
		Water quantity and quality	High piezometric head and permanently high water table (allowing for natural seasonal fluctuations) The spring water has low fertility and is rich in base ions.	Summer water levels (July-September) to fall no more than 10 cm below the surface.	
		Vegetation structure	Presence of varied sward structure with full range of vegetation heights, from close cropped to tall and ungrazed. Includes varying degrees of tussock height. Always includes elements of short pioneer fen vegetation	At height of summer (July August), fen vegetation to be typically no more than 0.5 metres tall, with random mosaic of differing vegetation and tussock heights across whole fen area.	As with extent, likely to be influenced by grazing regime, with vegetation responding to variable grazing pressure over time.
		Vegetation composition	Moss and liverwort carpets. List A: <i>Juncus subnodulosus</i> <i>Schoenus nrgricans</i> List B: <i>Pinguicula vulgaris</i> <i>Parnassia palustris</i> <i>Anagallis tenella</i> <i>Epipactis palustris</i>	Low growing moss carpets to occupy between 5 and 15% of overall fen area. Species in list A to be at least frequent. All species in list B to be at least occasional.	
Operational feature	Criteria feature	Attributes	Measures	Targets	Comments
		Negative indicators	<i>Urtica dioica</i> <i>Salix cinerea</i> <i>Epilobium hirsutum</i> <i>Eupatorium cannabinum</i> <i>Fillipendula ulmaria</i>	Clumps of <i>Salix cinerea</i> to occupy no more than 5% of the overall fen area. All other species listed to be no more than rare in the overall fen area.	
Wet Alder	W5 alder - greater	Area	Current area	Maintain as a minimum	

Woodland	tussock sedge <i>Alnus glutinosa</i> - <i>Carex paniculata</i> wet woodland W6 alder - nettle <i>Alnus glutinosa</i> - <i>Urtica dioica</i> wet woodland			baseline the current area.	
		Natural processes and structural development	Area of woodland allowed to function as non-intervention, and area restored as alder coppice. Veteran trees.	No less than 60% of the wet woodland area to be retained as non-intervention. Restore coppice management of up to 40% of the overall woodland area. Old veteran alder specimens to be at least 2 per hectare.	<i>(Steve these are nominal figures to give you an idea of the sort of attribute and target being set in principle. Please tweak to make more applicable to site)</i>
		Regeneration	Density, strength and distribution of young alder regeneration throughout woodland area.	Areas of regenerating, dense, young alder saplings to occupy up to than 15% of the overall non-intervention area.	
Operational feature	Criteria feature	Attributes	Measures	Targets	Comments
		Composition	List A: <i>Alnus glutinosa</i> List B: <i>Urtica dioica</i> <i>Fraxinus excelsior</i> <i>Betula pubescens</i> <i>Salix cinerea</i>	<i>Alnus glutinosa</i> to be at least abundant in both W5 and W6. Species in List B to be at least occasional but never more than frequent.	
		Quality indicators	Water table Dead wood	Ground to remain permanently wet and swampy all year round. Fallen dead wood to be present throughout the entire woodland area.	

				Standing dead wood to be at least two dead trees per hectare across the overall woodland area.	
Stands of reed and tall herb fen rich in <i>Cladium mariscus</i>	S2 great fen sedge <i>Cladium mariscus</i> swamp S25c common reed - hemp agrimony with great fen sedge <i>Phragmites australis</i> <i>Eupatorium cannabinum</i> (<i>Cladium mariscus</i> sub community) swamp	Extent	Extent identified by the Norfolk Valley Fen NVC survey (Smart 1992-93)	Maintain as a minimum baseline the extent and area identified by Smart (1992-93)	
		Water quality and quantity	Base-rich, low fertility supply of groundwater. High piezometric head and permanently high water table (allowing for natural seasonal fluctuations)	No significant reduction in the flux of groundwater to these communities Allowing for natural seasonal variation, water table to drop no more than 20cm below ground level in summer.	These swamp communities can be adversely affected by excessive enrichment
Operational feature	Criteria feature	Attributes	Measures	Targets	Comments
		Vegetation structure	% cover of tall vegetation dominated by <i>Cladium mariscus</i> .	S2 is Tall <i>Cladium</i> dominated swamp, not less than 0.5 metres high, to occupy no less than 80% of the overall swamp area. S25c is tall <i>Phragmites</i> dominated swamp, not less than 0.5 metres high across 80% of the area.	
		Vegetation composition	List A: <i>Cladium mariscus</i> <i>Phragmites australis</i> List B: <i>Hottonia palustris</i> <i>Mentha aquatica</i> <i>Caltha palustris</i>	<i>Cladium mariscus</i> to be at least frequent in S2, occasional in S25c. <i>Phragmites</i> to be at least o be at least frequent in S25 c Species in List B to be at least occasional.	
		Negative indicators	encroaching <i>Salix cinerea</i>	<i>Salix</i> scrub to occupy no more	Encroaching negative

			<i>Urtica dioica</i> <i>Rubus spp.</i>	than 10% of the overall swamp area	species may indicate either drying out or insufficient management.
Purple moor grass mire	M24 purple moor grass - meadow thistle <i>Molinia caerulea</i> - <i>Cirsium dissectum</i> fen meadow	Extent	Extent identified in Norfolk Valley Fen NVC survey (Smart 1992-93)	Maintain as an absolute minimum baseline the overall area and extent identified by Smart (1992-93).	Extent of fen communities may be subject to some natural dynamic variation, in response to extensive grazing pressure
Operational feature	Criteria feature	Attributes	Measures	Targets	Comments
		Sward composition: positive indicator species	The frequency of positive indicator species from the list below to give an overall total of 2 frequent and 3 occasional. <i>Anagallis tenella, Angelica sylvestris, Cirsium dissectum, Erica tetralix, Eupatorium cannabinum, Filipendula ulmaria, Galium uliginosum/ Galium palustre, Lotus pedunculatus, Orchidaceae spp., Pedicularis sylvatica, Potentilla erecta, sedges (C. flacca, C.nigra,C.panicea), Sphagnum spp., Succisa pratensis, Valeriana dioica, Viola palustris.</i>	Overall total of at least two species/taxare frequent plus at least three species/taxa are occasional throughout the sward. <i>Eupatorium cannabinum, Angelica sylvestris and Filipendula ulmaria</i> should be no more than occasional.	Choice of species related to NVC types, restriction to unimproved grassland and wetness characteristics of habitat, all satisfactory when inside target. Among possible species that could be used, choice further restricted by ease of identification, visibility in recording period.
		Sward composition: frequency and cover of <i>Molinia caerulea</i>	Record the frequency and % cover of <i>Molinia caerulea</i> . Record in period early June - end of August.	At least frequent throughout the sward but no more than 80% cover	<i>Molinia</i> is characteristic of the community and should be at least frequent. However, increasing cover exceeding upper target is indicative of insufficient management by grazing

		*Sward composition: cover of <i>Juncus</i> spp	Record the % cover of <i>Juncus</i> species from groups A and B. Record in period early June - end of August. Group A: jointed rushes (<i>Juncus acutiflorus</i> , <i>J. articulatus</i> , <i>J. subnodulosus</i>) Group B: <i>Juncus conglomeratus</i> , <i>J. effusus</i> and <i>J. inflexus</i> .	All species combined no more than 80% cover, of which no more than 50% made up of spp. from Group B	or cutting. <i>Juncus</i> spp can be characteristic components of the communities. However, increasing cover is indicative of insufficient management by grazing or cutting and/or waterlogging. Group B species may indicate problems of eutrophication when outside target .
Operational feature	Criteria feature	Attributes	Measures	Targets	Comments
		*Sward composition: negative indicator species.	Record the % cover of negative indicator species. Record in period early June - end of August. <i>Cirsium palustre.</i> <i>Deschampsia cespitosa</i> <i>Phragmites australis</i> <i>Salix cinerea</i> <i>Cirsium vulgare</i>		Invasive species outside targets shows that habitat is not being managed sufficiently eg lack of or insufficient grazing/cutting
		Sward structure: average height	Sward height in period early June - end of August. (Upper target refers to pastures only.)	M24a Sward 5 cm or greater (excluding <i>Juncus</i> spp.) but no more than 25% over 60 cm M24b, M24c Sward 2 cm or greater (excluding <i>Juncus</i> spp.) but no more than 25% over 15 cm	Sward height above upper target shows that habitat is not being managed sufficiently eg lack of or insufficient grazing or if below lower target, is being overgrazed.
		Sward structure: litter	Cover of litter where in a more or less continuous layer, distributed either in patches or in one larger area. Record in period early June - end of August for pastures.	Total extent no more than 20% of the sward	Outside target indicates biomass removal is insufficient eg lack of or insufficient grazing or not cut for hay.
		Sward structure: bare ground	Extent of bare ground distributed through the sward, visible without disturbing the vegetation. Record in period early June - end of August.	No more than 5%	Outside target indicates problems with stock management eg poaching, supplementary feeding.

Unimproved calcareous grassland	CG2	Extent	Total area (ha), mapped in relation to baseline surveys by Moore (1993) and Smart (1992) , in period May-July.	No reduction in area and extent and any consequent fragmentation without prior consent	Recoverable reduction = unfavourable; non-recoverable reduction = partially destroyed. Excludes bare ground associated with rabbit warrens (see below).
Operational feature	Criteria feature	Attributes	Measures	Targets	Comments
		Sward composition: positive indicator species	Record the frequency of positive indicator species in period May-July. <i>Anthyllis vulneraria, Asperula cynanchica, Campanula glomerata, Cirsium acaule, Filipendula vulgaris, Gentianella spp., Helianthemum nummularium, Hippocrepis comosa, Leontodon hispidus/L. saxatilis, Leucanthemum vulgare, Linum catharticum, Lotus corniculatus, Pilosella officinarum (Hieracium pilosella), Plantago media, Polygala spp., Primula veris, Sanguisorba minor, Scabiosa columbaria, Serratula tinctoria* , Succisa pratensis, Thymus spp.*</i> not a Breckland species.	At least four species/taxa frequent plus at least three species/taxa occasional throughout the sward.	Choice of species related to NVC type and restriction to unimproved grassland, considered satisfactory when inside target. Among possible species that could be used, choice further restricted by ease of identification, visibility in recording period.
		Sward composition: grass/herb ratio	Proportion of non-Graminae (“herbs”), in period May -July.	40-90%	Low proportion outside target indicates eutrophication, usually from fertilisers, or insufficient removal of biomass, leading to dominance by grasses.
		Sward composition: negative indicator species	Record % cover of <i>Brachypodium pinnatum</i> and <i>Bromopsis erecta</i> , in period May-July.	Neither species at more than 10% cover	Outside target indicates insufficient removal of biomass eg under-grazing.

Operational feature	Criteria feature	Attributes	Measures	Targets	Comments
		Sward composition: negative indicator species	Record the frequency and % cover of negative indicator species. Record in period May-July. <i>Cirsium arvense, Cirsium vulgare, Rumex crispus, Rumex obtusifolius, Senecio jacobaea, Urtica dioica.</i>	No species/taxa more than occasional throughout the sward or singly or together more than 5% cover	Invasive species chosen to indicate problems of eutrophication and disturbance from various sources when outside target eg poaching, stock feeding.
		Sward composition: negative indicator species	Record the frequency and % cover of all tree and scrub species excluding <i>Juniperus communis</i> , considered together, in period May-July.	No more than 5% cover.	Invasive species outside target shows that habitat is not being managed sufficiently eg under-grazed. If scrub/tree species are more than occasional throughout the sward but less than 5% cover, they are soon likely to become a problem if grazing levels are not sufficient or if scrub control is not being carried out.
		Sward structure: average height	Record sward height in period May-July.	Sward 2-10 cms.	Outside target indicates insufficient grazing or over-grazing.
		Sward structure: litter	Record cover of litter where in a more or less continuous layer, distributed either in patches or in one larger area, in period May-July.	Total extent no more than 25% of the sward	Outside target indicates biomass removal is insufficient eg under-grazed.
		Sward structure: bare ground	Record extent of bare ground (not rock) distributed through the sward, visible without disturbing the vegetation, in period May-July.	No more than 10% .	Outside target indicates management problems eg over-grazing.
Operational feature	Criteria feature	Attributes	Measures	Targets	Comments
		Sward structure: localized bare ground	Record extent of localized bare ground around rabbit warrens.	No more than 0.05 ha ie approximately 20x20 metres	Outside target indicates rabbit grazing and

					disturbance levels are too high.
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cSAC: Norfolk Valley Fens
Component SSSI: Flordon Common

Conservation objective for the European Interest on the SSSI

The conservation objectives for the European interests on the SSSI are:

to maintain*, in favourable condition, the:

- Alkaline fens
- Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion*, *Alnion incanae*, *Salicion alvae*)
- *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*)

to maintain*, in favourable condition the habitats for the population of:

- *Vertigo angustior*

* maintenance implies restoration if the feature is not currently in favourable condition.

The Conservation Objectives for Norfolk Valley Fens candidate Special Area of Conservation are, in accordance with para C10 of PPG 9, the reasons for which the cSAC was designated. The cSAC also includes land within Badley Moor, Dereham SSSI, Booton Common SSSI, Buxton Heath SSSI, Coston Fen, Runhall SSSI, East Walton and Adcock's Common SSSI, Foulden Common SSSI, Great Cressingham Fen SSSI, Holt Lowes SSSI, Potter and Scarning Fens SSSI, Sheringham and Beeston Regis Common SSSI, Southrepps Common SSSI, Swangey Fen, Attleborough SSSI and Thompson Water, Carr and Common SSSI.

The favourable condition table will be used by English Nature to determine favourable condition and other relevant authorities to determine if a site is in favourable condition. Favourable condition is achieved when when the targets set out below are met.

The favourable condition table should inform the scope and nature of any ‘appropriate assessment’ under the Habitats Regulations, but an appropriate assessment will also require consideration of issues specific to the individual plan or project. The favourable condition table does not by itself provide a comprehensive basis on which to assess plans or projects as required under Regulations 20-21, 24, 48-50 and 54-85. The scope and content of an appropriate assessment will depend upon the location, size and significance of the proposed project. English Nature will advise on a case by case basis.

Following an appropriate assessment, competent authorities are required to ascertain the effect on the integrity of the site. The integrity of the site is defined in para. C10 of PPG9 as ‘the coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified. The determination of favourable condition is separate from the judgement of effect upon integrity. For example, there may be a time lag between a plan or project being initiated and a consequent adverse effect upon integrity being manifest in the condition assessment. In such cases, a plan or project may have an adverse effect upon integrity even though the site remains in favourable condition.

Operational feature	Criteria feature	Attributes	Measures	Targets	Comments
Spring and seepage-fed	M13 black bog rush - blunt flowered rush	Extent	Extent identified in Norfolk Valley Fen NVC survey (Smart	Maintain as an absolute minimum baseline the overall	Extent of fen communities may be

chalk-rich alkaline valley fen	<i>Schoenus nigricans</i> - <i>Juncus subnodulosus</i> fen.		1992-93)	area and extent identified by by Smart (1992-93).	subject to some natural dynamic variation, in response to extensive grazing pressure.
		Water quantity and quality	High piezometric head and permanently high water table (allowing for natural seasonal fluctuations) The spring water has low fertility and is rich in base ions.	Summer water levels (July-September) to fall no more than 10 cm below the surface.	
		Vegetation structure	Presence of varied sward structure with full range of vegetation heights, from close cropped to tall and ungrazed. Includes varying degrees of tussock height. Always includes elements of short pioneer fen vegetation	At height of summer (July August), fen vegetation to be typically no more than 0.5 metres tall, with random mosaic of differing vegetation and tussock heights across whole fen area.	As with extent, likely to be influenced by grazing regime, with vegetation responding to variable grazing pressure over time.
Operational feature	Criteria feature	Attributes	Measures	Targets	Comments
		Vegetation composition	Brown moss <i>Sphagnum spp.</i> carpets List A: <i>Schoenus nigricans</i> <i>Juncus subnodulosus</i> List B: <i>Pinguicula vulgaris</i> <i>Parnassia palustris</i> <i>Anagallis tenella</i> Orchid species	Low growing brown moss carpets to occupy between 5 and 15% of overall fen area. Both species in list A to be at least frequent. At least two species in list B to be at least occasional.	
		Negative indicators	<i>Phragmites australis</i>	Clumps of <i>Salix cinerea</i> to	

			<i>Urtica dioica</i> <i>Salix cinerea</i> <i>Epilobium hirsutum</i> <i>Eupatorium cannabinum</i> <i>Fillipendula ulmaria</i>	occupy no more than 5% of the overall fen area. All other species listed to be no more than rare in the overall fen area.	
Wet Alder Woodland	W6 alder - nettle <i>Alnus glutinosa</i> - <i>Urtica dioica</i> wet woodland	Area	Current extent	Maintain curent extent.	
		Natural processes and structural development	Area of woodland allowed to function as minimum-intervention. Veteran trees.	Whole area of wet woodland to be retained as minimum - intervention. Old veteran alder specimens to be at least 2 per hectare.	
Operational feature	Criteria feature	Attributes	Measures	Targets	Comments
		Regeneration	Density, stength and distribution of young alder regeneration throughout woodland area.	Areas of regenerating, dense, young alder saplings to occupy no less than 10% of the overall non-intervention area.	
		Composition	List A: <i>Alnus glutinosa</i> List B: <i>Urtica dioica</i> <i>Fraxinus excelsior</i> <i>Betula pubescens</i> <i>Salix cinerea</i>	<i>Alnus glutinosa</i> to be at least abundant Species in List B to be at least occasional but never more than frequent.	
		Quality indicators	Water table Dead wood	Ground to remain permanently wet and swampy all year round. Fallen dead wood to be present throughout the entire woodland area. Standing dead wood to be at least two dead trees per hectare across the the overall woodland	

				area.	
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Operational feature	Criteria feature	Attributes	Measures	Targets	Comments
Purple moor grass mire	M24 purple moor grass - meadow thistle <i>Molinia caerulea</i> - <i>Cirsium dissectum</i> fen meadow	Extent	Extent identified by Norfolk Valley Fen survey (Smart 1992-93)	Maintain as minimum baseline the extent identified by Smart 1992-93)	Extent of fen communities may be subject to some natural dynamic variation, in response to extensive grazing pressure
		Sward composition: positive indicator species	The frequency of positive indicator species from the list below to give an overall total of 2 frequent and 3 occasional. <i>Anagallis tenella, Angelica sylvestris, Cirsium dissectum, Erica tetralix, Eupatorium cannabinum, Filipendula ulmaria, Galium uliginosum/ Galium palustre, Lotus pedunculatus, Orchidaceae spp., Pedicularis sylvatica, Potentilla erecta, sedges (C. flacca, C.nigra,C.panicea), Sphagnum spp., Succisa pratensis, Valeriana dioica, Viola palustris.</i>	Overall total of at least two species/taxa frequent plus at least three species/taxa are occasional throughout the sward. <i>Eupatorium cannabinum, Angelica sylvestris and Filipendula ulmaria</i> should be no more than occasional.	Choice of species related to NVC types, restriction to unimproved grassland and wetness characteristics of habitat, all satisfactory when inside target. Among possible species that could be used, choice further restricted by ease of identification, visibility in recording period.
Operational feature	Criteria feature	Attributes	Measures	Targets	Comments

		Sward composition: frequency and cover of <i>Molinia caerulea</i>	Record the frequency and % cover of <i>Molinia caerulea</i> . Record in period early June - end of August.	At least frequent throughout the sward but no more than 80% cover	<i>Molinia</i> is characteristic of the community and should be at least frequent. However, increasing cover exceeding upper target is indicative of insufficient management by grazing or cutting.
		*Sward composition: cover of <i>Juncus</i> spp	Record the % cover of <i>Juncus</i> species from groups A and B. Record in period early June - end of August. Group A: jointed rushes (<i>Juncus acutiflorus</i> , <i>J. articulatus</i> , <i>J. subnodulosus</i>) Group B: <i>Juncus conglomeratus</i> , <i>J. effusus</i> and <i>J. inflexus</i> .	All species combined no more than 80% cover, of which no more than 50% made up of spp. from Group B	<i>Juncus</i> spp can be characteristic components of the communities. However, increasing cover is indicative of insufficient management by grazing or cutting and/or waterlogging. Group B species may indicate problems of eutrophication when outside target .
		*Sward composition: negative indicator species.	Record the % cover of negative indicator species. Record in period early June - end of August. <i>Cirsium palustre</i> . <i>Deschampsia cespitosa</i> <i>Phragmites australis</i> <i>Salix cinerea</i> <i>Cirsium vulgare</i>		Invasive species outside targets shows that habitat is not being managed sufficiently eg lack of or insufficient grazing/cutting
Operational feature	Criteria feature	Attributes	Measures	Targets	Comments
		Sward structure: average height	Sward height in period early June - end of August. (Upper target refers to pastures only.)	M24a Sward 5 cm or greater (excluding <i>Juncus</i> spp.) but no more than 25% over 60 cm M24b, M24c	Sward height above upper target shows that habitat is not being managed sufficiently eg lack of or insufficient grazing or if below lower target, is

				Sward 2 cm or greater (excluding <i>Juncus</i> spp.) but no more than 25% over 15 cm	being overgrazed.
		Sward structure: litter	Cover of litter where in a more or less continuous layer, distributed either in patches or in one larger area. Record in period early June - end of August for pastures.	Total extent no more than 20% of the sward	Outside target indicates biomass removal is insufficient eg lack of or insufficient grazing or not cut for hay.
		Sward structure: bare ground	Extent of bare ground distributed through the sward, visible without disturbing the vegetation. Record in period early June - end of August.	No more than 5%	Outside target indicates problems with stock management eg poaching, supplementary feeding.
Operational feature	Criteria feature	Attributes	Measures	Targets	Comments
Fen	<i>Vertigo angustior</i>	Vegetation composition	visual assessment	Marshy grass or sedge sward on damp but not saturated soil, with sparse and short <i>Iris pseudacorus</i> plants. Tall monocots should remain sparse.	Other plants indicative of suitably damp conditions include <i>Mentha aquatica</i> , <i>Hydrocotyle vulgaris</i> , <i>Equisetum palustre</i> and <i>Lotus uliginosus</i> , but the absence of these plants may not indicate that conditions have become unsuitable. The monocot element may also include <i>Juncus</i> or <i>Phalaris</i> .
		Vegetation height and structure	visual assessment, percentage area	Lower limit: Less than one third of the occupied area with vegetation no shorter than 5cm tall, or without short grass,	Light grazing and trampling pressure will normally be expected to retain these conditions.

				<p><i>Juncus</i> or <i>Iris</i> tussocks, or without an obvious layer of litter below the sward.</p> <p>Upper limit: Less than one third of the occupied area with rank grasses and tall herbs.</p>	
		Shade	visual assessment	Open, unshaded conditions. Shade from scrub and trees directly above occupied habitat must be less than 10%. Scrub and trees within 5-10m of colonies is acceptable.	
Operational feature	Criteria feature	Attributes	Measures	Targets	Comments
		Soil moisture	visual assessment	<p>1) Damp, not waterlogged.</p> <p>2) Gradient still clearly evident, and not subject either to drying out or prolonged flooding.</p>	



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pSPA: Breckland
cSAC: Breckland
Component SSSI: Field Barn Heaths, Hilborough

Conservation objective for the European Interest on the SSSI

The conservation objectives for the European interests on the SSSI are :

to maintain*, in favourable condition, the:

- Semi-natural dry grasslands and scrubland facies: on calcareous substrates (*Festuco-Brometalia*)

to maintain*, in favourable condition, the habitats for the populations of the Annex 1 bird species⁺, of European importance, with particular reference to:

- heathland
- acid grassland
- chalk grassland and/or inland dune communities

⁺ Stone Curlew, Nightjar

* maintenance implies restoration if the feature is not currently in favourable condition.

The Conservation Objectives for Breckland proposed Special Protection Area and Breckland candidate Special Area of Conservation are, in accordance with para C 10 of PPG 9, the reasons for which the pSPA was proposed and the SAC designated .

The Breckland cSAC and the Breckland pSPA include land within:

Barnhamcross Common SSSI	Gooderstone Warren SSSI
Berner's Heath, Icklingham SSSI	Grime's Graves SSSI
Bridgham and Brettenham Heaths SSSI	Lakenheath Warren SSSI
Cavenham - Icklingham Heaths SSSI	Stanford Training Area SSSI
Cranwich Camp SSSI	Thetford Golf Course and Marsh SSSI
Deadman's Grave, Icklingham SSSI	Thetford Heath SSSI
East Wretham Heath SSSI	Wangford Warren and Carr SSSI
Field Barn Heaths, Hilborough SSSI	Weather and Horn Heaths SSSI
Foxhole Heath, Eriswell SSSI	Weeting Heath SSSI

The Breckland cSAC also includes land within:

Maidencross Hill SSSI	RAF Lakenheath SSSI
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The Breckland pSPA also includes land within

Barnham Heath SSSI	Little Heath, Barnham SSSI
Beeches Pit, West Stow SSSI	Old Bodney Camp SSSI
Cranberry Rough, Hockham SSSI	Rex Graham Reserve SSSI
Eriswell Low Warren SSSI	Warren Hill SSSI
High Lodge, Mildenhall SSSI	West Stow Heath SSSI
How Hill Track SSSI	

The Favourable Condition Table will be used by English Nature and other relevant authorities to determine if a site is in favourable condition. Favourable condition is achieved when the targets given below are met.

The favourable condition table should inform the scope and nature of any 'appropriate assessment' under the Habitats Regulations, but an appropriate assessment will also require consideration of issues specific to the individual plan or project. The favourable condition table does not by itself provide a comprehensive basis on which to assess plans and projects as required under Regulations 20-21, 24, 48-50 and 54 - 85. The scope and content of an appropriate assessment will depend upon the location, size and significance of the proposed project. English Nature will advise on a case by case basis.

Following an appropriate assessment, competent authorities are required to ascertain the effect on the integrity of the site. The integrity of the site is defined in para C10 of PPG9 as the coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified. The determination of favourable condition is separate from the judgement of effect upon integrity. For example, there may be a time-lag between a plan or project being initiated and a consequent adverse effect upon integrity becoming manifest in the condition assessment. In such cases, a plan or project may have an adverse effect upon integrity even though the site remains in favourable condition.

Annual counts for qualifying bird species will be used by English Nature, in the context of five year peak means, together with available information on UK population and distribution trends, to assess whether the SPA is continuing to make an appropriate contribution to the Favourable Conservation Status of the species across Europe.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Unimproved calcareous grassland	CG2	*Extent	Total area (ha), mapped in relation to a site-specific reference level to be determined , in period May-July.	No reduction in area and any consequent fragmentation without prior consent	Recoverable reduction = unfavourable; non-recoverable reduction = partially destroyed. Excludes bare ground associated with rabbit warrens (see below).
		*Sward composition: positive indicator species	Record the frequency of positive indicator species in period May- July. <i>Anthyllis vulneraria, Asperula cynanchica, Campanula glomerata, Cirsium acaule, Filipendula vulgaris, Gentianella spp., Helianthemum nummularium, Hippocrepis comosa, Leontodon hispidus/L. saxatilis, Leucanthemum vulgare, Linum catharticum, Lotus corniculatus, Pilosella officinarum (Hieracium pilosella), Plantago media, Polygala spp., Primula veris, Sanguisorba minor, Scabiosa columbaria, Serratula tinctoria, Succisa pratensis, Thymus spp.</i>	At least four species/taxa frequent plus at least three species/taxa occasional throughout the sward.	Choice of species related to NVC type and restriction to unimproved grassland, considered satisfactory when inside target. Among possible species that could be used, choice further restricted by ease of identification, visibility in recording period.
		*Sward composition: grass/herb ratio	Proportion of non-Graminae (“herbs”), in period May -July.	40-90%	Low proportion outside target indicates eutrophication, usually from fertilisers, or insufficient removal of biomass, leading to dominance by grasses.
		*Sward composition: negative indicator species	Record % cover of <i>Brachypodium pinnatum</i> and <i>Bromopsis erecta</i> , in period May-July.	Neither species at more than 10% cover	Outside target indicates insufficient removal of biomass eg under-grazing.
		*Sward composition: negative indicator species	Record the frequency and % cover of negative indicator species. Record in period May-July. <i>Cirsium arvense, Cirsium vulgare, Rumex crispus, Rumex obtusifolius, Senecio jacobaea, Urtica dioica.</i>	No species/taxa more than occasional throughout the sward or singly or together more than 5% cover	Invasive species chosen to indicate problems of eutrophication and disturbance from various sources when outside target eg poaching, stock feeding.
		*Sward composition:	Record the frequency and % cover of all tree and scrub species excluding <i>Juniperus communis</i> ,	No more than 5% cover.	Invasive species outside target shows that habitat

		negative indicator species	considered together, in period May-July. NB If scrub/tree species are more than occasional throughout the sward but less than 5% cover, they are soon likely to become a problem if grazing levels are not sufficient or if scrub control is not being carried out.		is not being managed sufficiently eg under-grazed.
		Sward structure: average height	Record sward height in period May-July.	Sward 2-10 cms.	Outside target indicates insufficient grazing or over-grazing.
		Sward structure: litter	Record cover of litter where in a more or less continuous layer, distributed either in patches or in one larger area, in period May-July.	Total extent no more than 25% of the sward	Outside target indicates biomass removal is insufficient eg under-grazed.
		Sward structure: bare ground	Record extent of bare ground (not rock) distributed through the sward, visible without disturbing the vegetation, in period May-July.	No more than 10% .	Outside target indicates management problems eg over-grazing.
		Sward structure: localized bare ground	Record extent of localized bare ground around rabbit warrens.	No more than 0.05 ha ie approximately 20x20 metres	Outside target indicates rabbit grazing and disturbance levels are too high.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
All habitats; heathland, acid grassland, chalk grassland and/or inland dune communities	Annex 1 populations of European importance: stone-curlew, nightjar,	Extent and distribution of habitat	Area, measured periodically (frequency to be determined)	No significant decrease from reference level.	Methodology for assessing target to be determined. Reference level to be determined.
	Annex 1 populations of European importance: stone-curlew, nightjar,	Disturbance	Reduction or displacement of birds, measured periodically (frequency to be determined)	No significant reduction or displacement of birds attributable to human disturbance in relation to reference level.	Methodology for assessing target to be determined. Reference level to be determined.
	Annex 1 population of European importance: stone-curlew	Food availability -	Abundance of soil and dung invertebrates, measured periodically (frequency to be determined)	Presence and abundance of prey species should not deviate significantly from reference level	Including e.g. beetles, grasshoppers, flies, earthworms, snails, slugs. Methodology for assessing target to be determined. Reference level to be determined.
	Annex 1 population of	Food availability	Abundance of night-flying insects, measured periodically (frequency to be determined).	Presence and abundance of prey species should	Moths and beetles are important for nightjar.

	European importance: nightjar			not deviate significantly from reference level.	Methodology for assessing target to be determined. Reference level to be determined.
	Annex 1 population of European importance: stone-curlew	Vegetation characteristics	Extent and proportions of patches of at least half-hectare with vegetation less than 2cm high and at least 10% bare ground and unrestricted views over 200m, patches of medium height vegetation for roosting, measured periodically (frequency to be determined).	No significant decrease in extent and proportions of patches of at least half-hectare with vegetation less than 2cm high and at least 10% bare ground and unrestricted views over 200m, patches of medium height vegetation for roosting, measured periodically; from reference level.	Methodology for assessing target to be determined. Reference level to be determined.
	Annex 1 population of European importance: nightjar	Vegetation characteristics	open ground with low vegetation (feeding), and sparse woodland / scrub cover (feeding, roosting).	No significant decrease in extent and proportions of open ground with predominantly low vegetation (feeding), and sparse woodland / scrub cover (feeding, roosting) from reference level.	Nightjar require vegetation mostly 20-60cm high with less than 50% tree/scrub cover overall. Reference level to be determined.

SLR/NS



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cSAC: The Broads
SPA: Broadland
Component SSSI: Ludham-Potter Heigham Marshes

Conservation objectives for the European Interest on the SSSI

The conservation objectives for the European interest on the SSSI are:

to maintain*, in favourable condition, the:

- Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior*.
- Natural eutrophic lakes with *Magnopotamion* or *Hydrocharition*-type vegetation.
- *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*).

to maintain*, in favourable condition, the habitats for the population of:

- Otter (*Lutra lutra*).

to maintain*, in favourable condition, the habitats for the populations of Annex1 bird species⁺ of European importance with particular reference to:

- fen meadow with ditches.
- reedbed
- lowland wet grassland with ditches and water bodies.

+Marsh harrier, Hen harrier, Bewick's swan, Whooper swan and Ruff.

to maintain*, in favourable condition, the habitats for the populations of migratory bird species⁺ of European importance with particular reference to:

- fen meadow with ditches.

- reedbed
- lowland wet grassland with ditches and water bodies.

+Gadwall and Shoveler.

to maintain*, in favourable condition, the habitats of the populations of waterfowl that contribute to the wintering waterfowl assemblage of European interest features, with particular reference to:

- Reedbed
- Fen meadow and lowland wet grassland with ditches and water bodies.

* maintenance implies restoration if the feature is not currently in favourable condition.

The Conservation Objectives for The Broads candidate Special Area of Conservation and Broadland Special Protection Area are, in accordance with para C 10 of PPG 9, the reasons for which the cSAC was designated and the SPA classified. The entry of 30 January 1996 on the Register of European Sites gives the reasons for which the SPA was classified.

The **Broads cSAC** and **Broadland SPA** includes land within: Alderfen Broad SSSI, Ant Broads and Marshes SSSI, Barnby Broad and Marshes SSSI, Broad Fen, Dilham SSSI, Bure Broads and Marshes SSSI, Burgh Common and Muckfleet Marshes SSSI, Calthorpe Broad SSSI, Cantley Marshes SSSI, Crostwick Marsh SSSI, Decoy Carr, Acle SSSI, Ducan's Marsh, Claxton SSSI, Geldeston Meadows SSSI, Hall Farm Fen, Hemsby SSSI, Halvergate Marshes SSSI, Hardley Flood SSSI, Limpenhoe Meadows SSSI, Ludham-Potter Heigham Marshes SSSI, Poplar Farm Meadows, Langley SSSI, Priory Meadows, Hickling SSSI, Shallam Dyke Marshes, Thurne SSSI, Smallburgh Fen SSSI, Sprat's Water and Marshes, Carlton Colville SSSI, Stanley and Alder Carrs, Aldeby SSSI, Upper Thurne Broads and Marshes SSSI, Upton Broads and Marshes SSSI and Yare Broads and Marshes SSSI.

The **Broads cSAC** additionally includes land within: Damgate Marshes, Acle SSSI and Trinity Broads SSSI.

Favourable Condition Table for Ludham-Potter Heigham Marshes SSSI

The Favourable Condition Table will be used by English Nature and other relevant authorities to determine if a site is in favourable condition. Favourable condition is achieved when the targets given below are met.

The favourable condition table should inform the scope and nature of any 'appropriate assessment' under the Habitats Regulations, but an appropriate assessment will also require consideration of issues specific to the individual plan or project. The favourable condition table does not by itself provide a comprehensive basis on which to assess plans and projects as required under Regulations 20-21, 24, 48-50 and 54 - 85. The scope and content of an appropriate assessment will depend upon the location, size and significance of the proposed project. English Nature will advise on a case by case basis.

Following an appropriate assessment, competent authorities are required to ascertain the effect on the integrity of the site. The integrity of the site is defined in para C10 of PPG9 as the coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified. The determination of favourable condition is separate from the judgement of effect upon integrity. For example, there may be a time-lag between a plan or project being initiated and a consequent adverse effect upon integrity becoming manifest in the condition assessment. In such cases, a plan or project may have an adverse effect upon integrity even though the site remains in favourable condition.

Annual counts for qualifying bird species will be used by English Nature, in the context of five year peak means, together with available information on UK population and distribution trends, to assess whether the SPA is continuing to make an appropriate contribution to the Favourable Conservation Status of the species across Europe.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Molinia meadows on calcareous, peaty or clayey-silt-laden soils (<i>Molinion caeruleae</i>) Unimproved marshy grassland	NVC type M24 M25	Extent	Total area (ha), mapped in relation to a site-specific reference level to be determined, in period early June - end of August.	No reduction in area and any consequent fragmentation without prior consent	Recoverable reduction = unfavourable; non-recoverable reduction = partially destroyed. Temporary reductions related to natural variation in hydrological conditions should be noted as such where information allows.
		Sward composition: positive indicator species	Record the frequency of positive indicator species from the list below to give an overall total of 2 frequent and 3 occasional. Record in period early June - end of August. <i>Anagallis tenella, Angelica sylvestris, Cirsium dissectum, Erica tetralix, Eupatorium cannabinum, Filipendula ulmaria, Galium uliginosum/ Galium palustre, Orchidaceae spp., Pedicularis sylvatica, Potentilla erecta, small blue-green Carex spp. (leaves less than 5mm wide) (C. flacca, C.nigra, C.panicea), Sphagnum spp., Succisa pratensis, Valeriana dioica, Valeriana officinalis, Viola palustris.</i>	Overall total of at least two species/taxa frequent plus at least three species/taxa occasional throughout the sward.	Choice of species related to NVC types, restriction to unimproved grassland and wetness characteristics of habitat, all satisfactory when inside target. Among possible species that could be used, choice further restricted by ease of identification, visibility in recording period.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		Sward composition: frequency and cover of <i>Molinia caerulea</i>	Record the frequency and % cover of <i>Molinia caerulea</i> . Record in period early June - end of August.	At least frequent throughout the sward but no more than 80% cover	<i>Molinia</i> is a characteristic component of the community and should thus be at least frequent. However, increasing cover exceeding upper target is indicative of insufficient management by grazing or cutting.
		Sward composition: negative indicator species	Record the frequency and % cover of negative indicator species. Record in period early June- end of August. <i>Cirsium arvense, Cirsium vulgare, Rumex crispus, Rumex obtusifolius, Urtica dioica.</i>	No species more than occasional throughout the sward or singly or together more than 5% cover	Invasive species chosen to indicate problems of eutrophication and disturbance from various sources when outside target eg poaching, stock feeding.
		Sward composition: cover of <i>Juncus</i> spp	Record the % cover of <i>Juncus</i> species from groups A and B. Record in period early June - end of August. Group A: jointed rushes (<i>Juncus acutiflorus, J. articulatus, J. subnodulosus</i>) Group B: <i>Juncus conglomeratus, J. effusus and J. inflexus.</i>	All species combined no more than 80% cover, of which no more than 50% made up of spp. from Group B	<i>Juncus spp</i> can be characteristic components of the communities. However, increasing cover is indicative of insufficient management by grazing or cutting and/or waterlogging. Group B species may indicate problems of eutrophication from various sources when outside target eg stock feeding, fertiliser use.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		*Sward composition: negative indicator species.	Record the % cover of negative indicator species. Record in period early June - end of August. <i>Cirsium palustre</i> .	No more than 20% cover.	This species may be indicative of disturbance from various sources when outside target eg poaching, stock feeding.
		*Sward composition: negative indicator species.	Record the % cover of negative indicator species. Record in period early June - end of August. <i>Deschampsia cespitosa</i>	No more than 10% cover.	Increasing cover of <i>Deschampsia cespitosa</i> outside target may be indicative of insufficient management by grazing or cutting, overgrazing, disturbance by excessive poaching or altered hydrology eg reduced water movement in the soil profile during the year resulting in anaerobic conditions. Increasing cover may lead to reduced species richness in the community.
		*Sward composition: negative indicator species	Record the % cover or frequency of negative indicator species in period early June - end of August. All tree and scrub species excluding <i>Salix repens</i> and <i>Myrica gale</i> , considered together. NB If scrub/tree species in pastures are more than occasional throughout the sward but less than 5% cover, they are soon likely to become a problem if grazing levels are not sufficient or if scrub control is not being carried out.	No more than 5% cover.	Invasive species outside target shows that habitat is not being managed sufficiently eg lack of or insufficient grazing/cutting

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		*Sward composition: % cover of <i>Phragmites australis</i>	Record the % cover of <i>Phragmites australis</i> in period early June-end of August.	No more than 10% cover.	Increasing cover of <i>Phragmites australis</i> outside target may be indicative of insufficient management by grazing or cutting. Lack of management may ultimately convert the community to tall-fen in some geographical areas.
		Sward composition: % cover of <i>Myrica gale</i> .	Record the % cover of <i>Myrica gale</i> in period early June - end of August.	No more than 10% cover	If <i>Myrica</i> cover outside target this shows that habitat is not being managed sufficiently eg lack of or insufficient grazing/cutting
		Sward composition: negative indicator species.	Record the frequency and % cover of negative indicator species. Record in period early June - end of August. <i>Senecio aquaticus</i>	No more than occasional throughout the sward or more than 5% cover	Outside target can discourage hay/grazing management because the species is toxic to livestock, and is palatable when dry.
		Sward structure: average height	Record sward height in period early June - end of August. (Upper target refers to pastures only.)	M24a Sward 5 cm or greater (excluding <i>Juncus</i> spp.) but no more than 25% over 60 cm M24b Sward 2 cm or greater (excluding <i>Juncus</i> spp.) but no more than 25% over 15 cm	Sward height above upper target shows that habitat is not being managed sufficiently eg lack of or insufficient grazing or if below lower target, is being overgrazed.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		Sward structure: litter	Record cover of litter where in a more or less continuous layer, distributed either in patches or in one larger area. Record in period early June - end of August for pastures.	Total extent no more than 25% of the sward	Outside target indicates biomass removal is insufficient eg lack of or insufficient grazing or not cut for hay.
		Sward structure: bare ground	Record extent of bare ground distributed through the sward, visible without disturbing the vegetation. Record in period early June - end of August.	No more than 10%	Outside target indicates problems with stock management eg poaching, supplementary feeding.
Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i>, <i>Alnion incanae</i>, <i>Salicion alvae</i>) Semi-natural woodland	Parts of NVC types (W6 and 7)	Extent	Extent/location of stands	No loss of ancient semi-natural stands At least current area of recent semi-natural stands maintained, although their location may alter. At least the area of ancient woodland retained	* Stand loss due to natural processes eg in minimum intervention stands may be acceptable. * A high proportion of this type of woodland may be recent and hence a dynamic interchange with open wet communities may occur. * Stand destruction may occur if the understorey and ground flora are irretrievably damaged even if the canopy remains intact. * Loss = 0.5 ha or 0.5% of the stand area, whichever is the smaller. * 20% canopy cover is conventionally taken as the lower limit for an area to be considered as woodland. Stands of willow scrub may pose difficulties of definition. * Area and location of stands may be assessed remotely or by site visit.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		3.Regeneration potential	Successful establishment of young stems in gaps or on the edge of a stand	<ul style="list-style-type: none"> * Signs of seedlings growing through to saplings to young trees at sufficient density to maintain canopy density over a 10 yr period (or equivalent regrowth from coppice stumps). * No planting in stands. 	<ul style="list-style-type: none"> * A proportion of gaps at any one time may develop into permanent open space; equally some current permanent open space/glades may in time regenerate to closed canopy. * Regeneration may often occur on the edges of stands rather than in gaps within it. * In coppice most of the regeneration will be as stump regrowth. See JNCC Guidance Note on likely desirable levels of regeneration. * The minimum level of regeneration to be acceptable from a nature conservation viewpoint is likely to be much less than that needed where wood production is also an objective. * Assess this attribute by walking through the wood in spring/summer.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		4. Composition	Cover of native versus non-native species (all layers) Death, destruction or replacement of native woodland species through effects of non-native fauna or external unnatural factors	<ul style="list-style-type: none"> * At least the current level of site-native species maintained. * At least 90% of cover in any one layer of site-native or acceptable naturalised species. * Death, destruction or replacement of native woodland species through effects of introduced fauna or other external unnatural factors not more than 10% by number or area in a five year period. 	<ul style="list-style-type: none"> * In sites where there might be uncertainty as to what counts as site-native or as an acceptable naturalised species this must be made clear (eg the position of poplar). * Where cover in any one layer is less than 100% then the 90% target applies to the area actually covered by that layer. * Factors leading to the death or replacement of woodland species could include pollution, including eutrophication from adjacent farmland; new diseases (eg alder dieback). * Damage to species by non-native species that does not lead to their death or replacement by non woodland species (eg damage from squirrels to trees that non-the -less survive) is not necessarily unacceptable in nature conservation terms. * Excessive browsing/grazing by even native ungulates may be considered an unnatural external factor where it leads to undesirable shifts in the composition/structure of the stand, although this may be picked up by attributes 2 or 5 anyway. * Assess this attribute by a walk through the site.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		5. Species, habitats, structures characteristic of the site.	<p>Ground flora type</p> <p>Distinctive and desirable elements for a given site eg. locally uncommon species such as <i>Carex elata</i>; veteran trees or rich invertebrate assemblages.</p> <p>Patches of associated habitats and transitions eg to ash wood, open fen and open water</p>	<p>* 80% of ground flora cover referable to relevant NVC wet woodland community (W6 and 7)</p> <p>* Distinctive elements maintained at current levels and in current locations (where appropriate).</p> <p>* Patches and transitions maintained in extent and where appropriate location.</p>	<p>* Changes leading to these targets not being met may be acceptable where this is due to natural processes.</p> <p>* Distinctive elements and patches should be marked on maps for ease of checking in the field wherever possible.</p> <p>* If there are species groups/assemblages that cannot be assessed directly on a general site visit then surrogate features should be given where possible, eg dead wood concentrations for associated invertebrates.</p>

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
22.13 Natural eutrophic lakes with Magnopotamion or Hydrocharition type vegetation. Standing water-ditch system	NVC types: A3 A9 A13 A4 Types '7', '8', '9' and '10' of the GB Standing Water Classification.	Extent of community.	Check extent of beds in July/August every 4 years.	Extensive beds of submerged macrophytes should be present. Maintain mixed community.	Submerged vegetation characterised by broad leaved <i>Potamogeton</i> species such as <i>Potamogeton perfoliatus</i> , <i>P lucens</i> , <i>P crispus</i> , <i>P natans</i> , <i>P x salicilifolius</i> , <i>P coloratus</i> , <i>P polygonifolius</i> , <i>P gramineus</i> , <i>P. alpinus</i> and <i>Hydrocharition</i> type vegetation. <i>Hydrocharis morsus-ranae</i> is a very rare associate with the <i>Magnopotamion</i> in the UK. Its community components are present, however, mainly <i>Spirodela polyrhiza</i> , <i>Lemna minor</i> , <i>Hippuris vulgaris</i> , <i>Utricularia vulgaris</i> and <i>Apium inundatum</i> . Community should be mixed and no one species should be present above 40% level of total amount of macrophyte presence.
		Extent of <i>Potamogeton</i> species <i>Magnopotam ion</i> .	Check species presence in July/August every 4 years.	Maintain species presence of all <i>Magnopotamion</i> and fine leaved <i>Potamogetons</i> .	No one <i>Potamogeton</i> species should be present above 40% level of total amount or level of macrophyte presence (see Water Quality comment).
		Extent of nationally scarce or threatened species.	Establish population size and position of nationally scarce, rare or threatened species over a period of 3 years, on a quarterly basis; thereafter every two years in July/August.	Maintain presence of all nationally scarce, rare or threatened plant species.	Nationally scarce, rare or threatened species can vary in population size and extent due to temporal/seasonal changes in climate which affects physical variables such as water temperature.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		Water quality	Arrange for analysis of quarterly measurements of Total P for first three years; thereafter annually in July/August.	Maintain water quality particularly Total P levels. For southern systems 100 $\mu\text{g l}^{-1}$ or below, down to 65 $\mu\text{g l}^{-1}$.	The variable targets for Total P reflects the geographical range of this trophic state. The target for Total P should be set for individual SAC's and an acceptable range established. Increases in Total P suggest a need to move from annual July/August check, back to more intensive quarterly samples to verify whether change is real. Also check for cover shifts of macrophytes and dominant presence of pollution tolerant species above 40% level such as <i>Potamogeton pectinatus</i> , <i>Myriophyllum spicatum</i> and/or <i>Ceratophyllum demersum</i> .
		Water quantity	Check ditch levels during July/August.	Maintain hydrology of ditch system.	Hydrology involves not only ditch levels but flushing rates; prevent lowering or raising of ditch level through modification of outfalls. With ditch systems aim for constant high water table throughout the year Water abstraction may represent a significant issue through the reduction of ground water and flushing flows into marginal ditch systems.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		Sediment	Check for excessive growths of individual macrophytes ie above 40%.	Maintain sediment quality and quantity.	Effects of increased macrophyte growth also relates to water quality; if this is at target levels, then enrichment of sediments is an issue if broad leaved <i>Potamogeton</i> species decline and fine leaved <i>Potamogeton pectinatus</i> increases above 40% level or <i>Myriophyllum spicatum</i> / <i>Ceratophyllum demersum</i> become dominant. Introduced fish might through sediment disturbance move sites out of favourable condition. Check for increases in siltation from catchment use changes or changes in sewage treatment.
River	Otter <i>Lutra lutra</i>	Water quality	EA scale	"Good", with no pollution incidents	Refer to Environment Agency for data
		Flow rate	Mean annual flow rate	No reduction attributable to increased abstraction.	Data from Environment Agency
		Site integrity	Total area	No reduction of fragmentation of area	
		Fish stocks	EA assessment	Fish stocks appropriate to the nutrient status of the river No significant decline in fish biomass or species diversity	Refer to Environment Agency for sample data

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		Disturbance	Extent of public access to river	No significant change to river or bankside usage; no significant development	
		Bankside cover	Proportion of bank lined with trees, scrub or other thick cover	No overall permanent decrease	Some change acceptable as long as it is appropriately mitigated
		Presence of otters	Signs of otters	Signs of otters found at least once per year	Use data from national or county surveys
All habitats: Grassland Improved, Swamp, Marginal and Inundation, Standing Water	Annex 1 species of European importance and waterfowl assemblage including migratory species of European and national importance.	Extent of habitat.	Area (ha), measured periodically (frequency to be determined).	No significant decrease from reference level.	For all habitats for all qualifying species. Methodology for assessing target to be determined. Reference level to be determined.
		Disturbance in roosting and feeding areas	Reduction or displacement of birds, measured periodically (frequency to be determined).	No significant displacement of birds attributable to human disturbance in relation to reference level.	All qualifying breeding and wintering annex 1 and migratory species. Methodology for assessing target to be determined. Reference level to be determined.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
All habitats: Grassland Improved, Swamp, Marginal and Inundation, Standing Water	Annex 1 species of European importance.	Food Availability	Abundance of live mammals and birds, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of food species year round in relation to reference level.	Small-medium sized mammals (voles, mice, rabbits) and birds (pipits to ducks) are important prey in the breeding season for marsh harriers and during the winter for hen harriers. Methodology for assessing target to be determined. Reference level to be determined.
Grassland Improved	Annex 1 species of European importance.	Absence of obstruction to viewlines	Open terrain relatively free of obstructions (feeding, anti-predator, roosting), measured periodically (frequency to be determined).	No significant reduction in view-lines in feeding and roosting areas during the winter season.	Bewick's swan and whooper swan prefer unrestricted views over 500 metres. Ruff prefer unrestricted views over 200 metres. Methodology for assessing target to be determined.
Grassland Improved	Annex 1 species of European importance.	Food Availability	Presence and abundance of soil and ground surface invertebrates, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of prey species during the winter season in relation to reference level.	Dipteran flies, beetles and earthworms are important for Ruff. Methodology for assessing target to be determined. Reference level to be determined.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Grassland Improved	Annex 1 species of European importance.	Food availability	Presence and abundance of soft leaved plants , measured periodically (frequency to be determined).	No significant reduction in presence and abundance of food species during the winter season in relation to reference level.	<i>Lolium perenne, Glyceria fluitans, Phleum pratense, Rorippa amphibia, Alopecurus geniculatus</i> for Bewick's swan and whooper swan. Methodology for assessing target to be determined. Reference level to be determined.
Grassland Improved	Annex 1 species of European importance.	Vegetation characteristics	Predominantly short grassland swards (feeding and roosting during the winter period), measured periodically (frequency to be determined).	Vegetation height throughout areas used for feeding and roosting during the winter season should not deviate significantly.	Bewick's swan and whooper swan require a sward height <10 cm within feeding areas during the winter season. Ruff require a vegetation height of <10cm within roostin areas during the winter season. Methodology for assessing target to be determined.
Grassland Improved	Annex 1 species of European importance.	Hydrology/ Flow	Wet fields with surface pools, measured periodically (frequency to be determined).	No significant reduction in soggy or flooded areas during the winter season.	Bewick's swan require 25-50% of the area soggy or flooded. Ruff also prefer permanently wet and flooded areas with a water depth of <3 cm. Methodology for assessing target to be determined.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Standing Water	Migratory species of European and national importance.	Food Availability	Presence and abundance of aquatic plants, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of food species during the winter season in relation to reference level.	<p><i>Glyceria fluitans, Agrostis stolonifera, Chara, Potamogeton and Ceratophyllum spp</i> for gadwall.</p> <p><i>Scirpus, Eleocharis, Carex, Potamogeton and Glyceria</i> for shoveler.</p> <p><i>Chara, Nitella</i> and <i>Potamogeton spp.</i> are important for pochard and tufted duck.</p> <p><i>Chara, Cladophora, Potamogeton, Ruppia, Ranunculus</i> and <i>Elodea</i> are important for Coot.</p> <p>Methodology for assessing target to be determined. Reference level to be determined.</p>
Standing Water	Nationally important migratory species.	Food Availability	Presence and abundance of seed bearing plants, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of food species during the winter season in relation to reference level.	<p><i>Polygonum, Eleocharis, Rumex</i> and <i>Ranunculus</i> are important for Teal.</p> <p>Methodology for assessing target to be determined. Reference level to be determined.</p>
Standing Water	Migratory species of European and national importance.	Food availability	Presence and abundance of aquatic invertebrates, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of prey species during the winter season in relation to reference level.	<p>Hydrobia, crustaceans, caddisflies, diptera and beetles are important for shoveler.</p> <p>Hydrobia, flies, caddisfly, beetles and bugs are important for teal.</p> <p>Methodology for assessing target to be determined. Reference level to be determined.</p>

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Standing Water	Nationally important migratory species.	Food availability	Presence and abundance benthic invertebrates, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of prey species during the winter season in relation to reference level.	Chironomid larvae are important for pochard. <i>Dreissena polymorpha</i> , chironomid larvae, <i>Gammarus</i> and <i>Hydrobia</i> are important for tufted duck. Methodology for assessing target to be determined. Reference level to be determined.
Standing Water	Nationally important migratory species.	Food availability	Presence and abundance of surface and benthic invertebrates, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of prey species during the winter season in relation to reference level.	<i>Mytilus</i> , <i>Dreissena polymorpha</i> and caddis-fly larvae are important for coot. Methodology for assessing target to be determined. Reference level to be determined.
Standing Water	Migratory species of European and national importance.	Water depth	Areas of shallow medium and deep water (feeding), measured periodically (frequency to be determined).	Water depths should not deviate significantly during the winter season.	Gadwall require a water depth of <25cm. A kleptoparasitic relationship with Coot can allow Gadwall to potentially exploit deeper areas up to 2m in depth. Shoveler and teal require a water depth of <30cm. Coot require a water depth of 0.5-2m. Pochard and tufted duck require a water depth of 2-5m. Methodology for assessing target to be determined.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Standing Water	Annex 1 species of European importance and migratory species of national importance.	Water area	Large open areas of water(feeding, roosting), measured periodically (frequency to be determined).	No significant reduction in the area of open water for feeding and roosting during the winter season.	<p>Bewick's and whooper swan require one or more fresh waters of >10ha.</p> <p>Pochard require one or more fresh waters of >6ha.</p> <p>Tufted duck require one or more freshwaters of >5ha.</p> <p>Coot require one or more freshwaters of >2ha.</p> <p>Methodology for assessing target to be determined.</p>
Standing Water	Annex 1 species of European importance.	Hydrology/ Flow	Fluctuating water levels, measured periodically (frequency to be determined).	Range of water level fluctuation providing a succession of surface water areas (feeding) during the winter season.	<p>Ideally Bewick's and whooper swan require water levels fluctating by 5-15% per month.</p> <p>Methodology for assessing target to be determined.</p>



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SPA: Great Yarmouth North Denes
cSAC: Winterton - Horsey Dunes
Component SSSI: Winterton - Horsey Dunes

Conservation objective for the European Interest on the SSSI

The conservation objectives for the European interests on the SSSI are :

subject to natural change, to maintain*, in favourable condition, the:

- Eu-Atlantic decalcified fixed dune
- Humid dune slacks
- Embryonic shifting dunes
- Shifting dunes along the shoreline with *Ammophila arenaria* (white Dunes),

to maintain*, in favourable condition, the habitats for the populations of Annex 1 species + of European importance, with particular reference to:

- sand
- gravel
- shallow coastal waters

+ Little Tern

* maintenance implies restoration if the feature is not currently in favourable condition.

The Conservation Objectives for Great Yarmouth North Denes Special Protection Area and Winterton to Horsey candidate Special Area of Conservation are, in accordance with para C 10 of PPG 9, the reasons for which the SPA was classified and the cSAC was designated.

The entry of 25 August 1998 on the Register of European Sites gives the reasons for which the SPA was classified.

The SPA includes land within Great Yarmouth North Denes SSSI and Winterton - Horsey Dunes SSSI.

The draft conservation objectives for the Great Yarmouth North Denes European marine site were published by English Nature on 20 December 2000.

The Favourable Condition Table will be used by English Nature and other relevant authorities to determine if a site is in favourable condition. Favourable condition is achieved when the targets given below are met.

The favourable condition table should inform the scope and nature of any 'appropriate assessment' under the Habitats Regulations, but an appropriate assessment will also require consideration of issues specific to the individual plan or project. The favourable condition table does not by itself provide a comprehensive basis on which to assess plans and projects as required under Regulations 20-21, 24, 48-50 and 54 - 85. The scope and content of an appropriate assessment will depend upon the location, size and significance of the proposed project. English Nature will advise on a case by case basis.

Following an appropriate assessment, competent authorities are required to ascertain the effect on the integrity of the site. The integrity of the site is defined in para C10 of PPG9 as the coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified. The determination of favourable condition is separate from the judgement of effect upon integrity. For example, there may be a time-lag between a plan or project being initiated and a consequent adverse effect upon integrity becoming manifest in the condition assessment. In such cases, a plan or project may have an adverse effect upon integrity even though the site remains in favourable condition.

Annual counts for qualifying bird species will be used by English Nature, in the context of five year peak means, together with available information on UK population and distribution trends, to assess whether the SPA is continuing to make an appropriate contribution to the Favourable Conservation Status of the species across Europe.

Objectives for sand dune systems

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Sand dunes	Eu-Atlantic decalcified fixed dunes	Extent	Area (ha) of decalcified fixed dunes measured once per reporting cycle	No decrease in extent from reference level (to be established for individual sites from previous survey). Extent must take account of natural variation of this habitat as a result of succession to and interaction with other dune habitats, particularly acid fixed dune grassland. Specific targets to be locally derived. In most cases bare sand within areas of Eu-Atlantic decalcified fixed dunes should not exceed 25% cover	This habitat is a very scarce habitat in England and the UK as a whole. It is only likely to develop on older dune systems and may develop from fixed dune grassland. Relative proportions of these two habitat types will need to be assessed at a site level and local targets will need to be set, taking account of the relative importance of the site in a wider context.
		Substrate	Presence of sand with very low lime content in surface layers, (and hence a low pH), with low levels of plant nutrients. Assess once per reporting cycle	Maintain substrate composition of sand with low lime content with low levels of plant nutrients that supports this vegetation type, taking account of natural variation.	This habitat depends on the maintenance of a freely draining substrate which is not eroding or accreting to any great extent, with a low nutrient status. Greatest threat is from shell rich sand deposits potentially used in beach feeding.
		Vegetation composition and zonation	Presence of vegetation communities and patterns of distribution characteristic of Eu-Atlantic decalcified fixed dunes measured once during reporting cycle with the assessment being carried out at the optimal time in the growing season (May-August, but may vary according to local conditions).	Maintain vegetation communities characteristic of decalcified fixed dunes taking account of natural variation. At Winterton this is largely H1 <i>Calluna</i> with <i>Erica cineria</i>	Acidic fixed dune grassland may occur as part of a succession to other dwarf-shrub heath communities and in a mosaic of dune habitats. Some sites may support lichen-rich heath communities. Presence of <i>Cladonia</i> lichens notably reindeer lichens <i>Cladonia ciliata</i> var <i>tenuis</i> , <i>C. arbuscula</i> and <i>C. portentosa</i> .
		Vegetation structure	Relative proportion of dwarf-shrub heath in different growth phases (pioneer; building ;mature; senescent). Assess at least once every 10 years.	Maintain dwarf-shrub heath species in a vigorous state, capable of regeneration. Targets should be locally-derived	In order for dwarf-shrub heath species to be able to persist, seed or vegetative regeneration must be possible from existing vegetation within the site. A range of age classes allows for seed or vegetative growth to occur. There are some affinities with lowland heath

					communities.
Sand dune	Humid dune slacks	Extent	Area (ha) of dune slacks measured once per reporting cycle. Can be assessed from area of slack vegetation in growing season or area of standing water at the end of a wet winter (February/March).	Maintain overall extent of dune slacks within a dune system taking account of natural variation.	Dune slacks are low-lying areas in dune systems that are seasonally flooded. They can be very dynamic, interacting with other communities. New dune slacks may be created naturally in dynamic systems and can have 100% bare ground. Remote sensing/air photos can be useful in establishing a reference level.
		Substrate	Presence of sand and naturally-derived organic matter at depths that allow the water table to influence the surface layers	Maintain substrate composition of sand and organic matter that supports this vegetation type, taking account of natural variation. Specific targets to be locally derived	Substrate composition is an important determinant of sward composition.
		Hydrological regime	Proportion of dune slack area with standing water in summer months (July/August)	At least 10% of slack area in whole system with water at /above surface until summer months taking account of natural variation	Level of water table can be indicated by presence of standing water. Rainfall data will be important to help define the range of natural variation. Some sites may already have a dipwell system for assessing level of water table. Water balance relationships in dune systems can be complex and this measure can only provide an indication of one element of this attribute. More detailed site-specific studies may be required to clarify these relationships.
		Vegetation composition and zonation	Presence of vegetation communities and patterns of distribution characteristic of humid dune slacks sampled at least once during reporting cycle with the assessment being carried out at the optimal time in the growing season (May-August, but may vary according to local conditions)	Maintain vegetation composed mainly of dune slack communities previously recorded on the site (and transitions to other dune communities) with characterising species, taking account of natural variation. These communities are principally dominated by the M16 <i>Erica tetralix</i> - <i>Sphagnum compactum</i> community (the sub community lacking <i>Sphagnum</i>). The presence of <i>Erica tetralix</i> and <i>Osmunda regalis</i> is a good	Individual sites will exhibit different patterns and range of vegetation types depending on site size, geographical location, history, substrate and patterns of human use. Previous surveys should be used to establish the range for each site. The majority of sites will have been covered by the Sand Dune survey of Great Britain or other site specific surveys. Vegetation composition is influenced by degree of stability, climate and management, and communities will form mosaics with each other.

				indicator of the health of this habitat. As is the continued breeding success of natterjack toad.	
		Vegetation negative indicators	Presence of negative indicator species including non-native species, invasive species indicative of changes in nutrient status and species not characteristic of typical communities.	No further increase in species not typically associated with the communities that define the feature .Species at present causing problems are <i>Rhododendron</i> and the aquatic <i>Crassula helmsii</i> . <i>Nymphoides peltata</i> is also non-native at this site.	Changes in the extent and cover of invasive species usually indicate a change in conditions on a site, often as a result of anthropogenic activities which may promote rapid expansion or increase in cover. These are often initiated by changes in management. Such species may include those identified as negative indicators for grasslands e.g. <i>Cirsium arvense</i> , <i>Senecio jacobaea</i> , <i>Urtica dioica</i> , together with non-native species and scrub/trees. These will vary from site to site and locally-significant species will need to be defined
Sand dune	Embryonic shifting dunes	Extent	Length (m) and area (ha) of embryonic shifting dunes, measured at least once per reporting cycle in July/August, and percentage of area supporting at least sparse embryonic dune vegetation	No decrease in linear extent or area from reference level (to be established for individual sites from previous survey). Extent must take account of natural variation of this habitat as a result of dynamic coastal processes. Local target for the percentage of at least sparse embryonic dune vegetation to be c30% of the length of the site. (May need reviewing in due course)	This attribute is dependent on the continued operation of physical processes at the dune/beach interface and there being sufficient area available between high water mark and more stable dunes to allow the development of embryonic shifting dunes Judgements in changes to extent/area will have to take particular care to distinguish changes as a result of natural functions from those caused by anthropogenic actions because of the highly variable nature of this habitat. The continued presence of this element of a dune system is a good indicator of a structure and function of a sand dune system.
		Substrate	Presence of exposed beach plain at low tide drying to supply blown sand on to sufficient area for deposition of sand, often associated with drift line organic debris. Assess at least once per reporting cycle.	Sediment supply and deposition and drift line organic debris to be regulated by natural processes	Data is available through the beach profile monitoring carried out in relation to the Sea Palling to Winterton coast protection scheme).
		Mobility	Percentage of linear extent and area of substrate suitable for colonisation by embryonic shifting dunes not immediately constrained	No increase in linear extent or area constrained by introduced structures or landforms.	An important aspect of this habitat is its ability to modify its distribution in response to natural dynamic coastal processes. Introduction of physical constraints would reduce the extent of

			by introduced structures or landforms, or operations. Measured once per reporting cycle.		this community and affect the overall structure of the embryonic dune communities.
		Characteristic species of embryonic shifting dunes	Presence and cover of characterising species, particularly <i>Elytrigia juncea</i> , and/or <i>Leymus arenarius</i> , with other species such as <i>Honkenya peploides</i> , <i>Salsola kali</i> , <i>Cakile maritima</i> during the summer months of June, July or August	Maintain the presence and broad distribution of <i>Elytrigia juncea</i> , and/or <i>Leymus arenarius</i> , embryonic dunes allowing for natural variation. As these communities can be very variable, local targets will need to be established, but should not be lower than cover of at least 5% of the area that could be colonised.	Changes in the frequency and abundance of these species should be expected to occur seasonally as a result of natural disturbance by storm events, but the communities are sensitive to disturbance by human activities. In accreting systems, the growth of plants should be able to keep pace with the rate of sand deposition. Presence of flowering heads gives some indication of stability-recent embryo dunes often lack flowering heads. Seed and rhizome fragments from adjacent foredunes are an important source of propagules. Often intermixed with <i>Honkenya peploides</i> , <i>Cakile maritima</i> of the strand line communities.
Sand dune	Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white Dunes)	Extent	Area (ha) of shifting dunes along the shoreline with, <i>Ammophila</i> measured at least once per reporting cycle during the summer months of June, July or August	No decrease in extent from reference level (to be established for individual sites from previous survey). Extent must take account of natural variation of this habitat as a result of dynamic coastal processes and succession to other dune habitats.	This attribute is dependent on the continued operation of physical processes at the dune/beach interface and there being sufficient area available between high water mark and more fixed dunes to allow the development of embryonic shifting dunes Judgements in changes to extent/area will have to take particular care to distinguish changes as a result of natural functions vs. anthropogenic actions because of the variable nature of this habitat. The continued presence of this element of a dune system is a good indicator of a structure and function of a sand dune system. Increasing stability will cause it to be reduced in extent Complicated at Winterton by the presence of the concrete wall as a result an accretionary situation is not a problem but a naturally eroding situation breaks the link.
		Substrate	Presence of blown sand within stands of <i>Ammophila</i>	Maintain supply of wind blown sand and deposition through natural processes	Vegetation of shifting dunes can trap and grow through deposited sand. Blown sand is often evident as bare patches within vegetation or as newly-deposited areas over vegetation.

		Mobility	Percentage of linear extent and area of substrate suitable for colonisation by shifting dunes not immediately constrained by introduced structures or landforms, or operations, measured once per reporting cycle.	No increase in linear extent or area constrained by introduced structures or landforms.	An important aspect of this habitat is its ability to modify its vegetation in response to natural dynamic coastal processes. Mobility of the substrate is essential to maintain vegetation diversity. Introduction of physical constraints would reduce the extent of this community and affect the overall structure of the shifting dune communities.
		Range of vegetation communities	Presence of dune communities with active healthy marram grass (<i>Ammophila arenaria</i>) and/or other species at frequencies which characterise this habitat including <i>Carex arenaria</i> , <i>Ammophila arenaria</i> ; <i>Elymus farctus</i> ; <i>Leymus arenarius</i> ; other drought tolerant annuals and bryophytes	Maintain range of vegetation communities, which characterise this habitat, grading into more stable dune communities. The dynamic nature of this habitat will require site specific targets to be established based on previous surveys of this habitat in conjunction with other dune habitats.	Variation occurs within and between sites in the vegetation communities present, reflecting variation in sand deposition and stability. Bryophytes may occur in more stable areas, but where sand deposition is greatest vegetation will be dominated by <i>Ammophila</i> . <i>Leymus arenarius</i> is more abundant in the north of England. Well-developed shifting dunes are almost always associated with other dune habitats.
		Characteristic Species	This community is naturally species poor at Winterton. Surveys to establish presence and abundance of any characteristic species will need to be carried out in June to August, measured at least once per reporting cycle.	Where previously recorded, characteristic special species of shifting dunes are still present. Targets will need to be defined for individual sites based on existing records.	This habitat type can support a wide range of species, some of which have a restricted range.
		Lack of disturbance	Proportion of the shifting dune areas where vegetation colonisation/re colonisation is prevented by persistent human disturbance	No increase in area where vegetation colonisation/re colonisation is prevented by human activity	Whilst mobile dunes are naturally dynamic, their establishment can be greatly affected by persistent heavy trampling or other activities (beach cleaning) which prevent re colonisation after natural storm events

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Sand and Gravel and Shallow coastal waters	Populations of European importance Annex 1 species: Little Tern	Extent of habitat	Area (ha), measured periodically (frequency to be determined).	No significant decrease from reference level, subject to natural change.	Sand and shingle are the nesting area and shallow coastal waters are the feeding area for Little tern. Methodology for assessing target to be determined.. Reference level to be determined.
		Disturbance	Reduction or displacement of birds and productivity, measured periodically (frequency to be determined).	No significant reduction in numbers, displacement or productivity of birds attributable to human disturbance in relation to reference level, subject to natural change.	The breeding success of Little terns is particularly vulnerable to disturbance and predation. Productivity (number of successfully fledged young) can also be used to monitor disturbance. Methodology for assessing target to be determined.. Reference level to be determined.
Sand and Gravel	Populations of European importance Annex 1 species: Little Tern	Vegetation characteristics	Predominantly open ground with sparse vegetation and bare surfaces (colonial nesting), measured periodically (frequency to be determined).	Vegetation cover should not deviate significantly throughout the areas used for nesting, subject to natural change.	Nesting little terns require <10% vegetation cover. Open areas of largely bare shingle are important in areas used by nesting little terns. Open ground with sparse vegetation allows unrestricted views for early detection of predators. Methodology for assessing target to be determined..
Shallow Coastal waters	Populations of European importance Annex 1 species: Little Tern	Food availability	Presence and abundance of marine fish, crustaceans, worms and molluscs, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of food species in relation to reference level, subject to natural change.	Small marine fish, crustaceans, worms and molluscs are an important food source for Little tern.s. Methodology for assessing target to be determined.. Reference level to be determined.



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pSPA: Breckland
Component SSSI: West Stow Heath

Conservation objective for the European Interest on the SSSI

The conservation objectives for the European interests on the SSSI are :

to maintain*, in favourable condition, the habitats for the populations of the Annex 1 species⁺, of European importance, with particular reference to

- heathland
- acid grassland
- chalk grassland and/or inland dune communities

⁺ Woodlark, Nightjar

* maintenance implies restoration if the feature is not currently in favourable condition.

The Conservation Objectives for Breckland proposed Special Protection Area are, in accordance with para C 10 of PPG 9, the reasons for which the SPA was classified.

The Breckland pSPA includes land within:

Barnhamcross Common SSSI	High Lodge, Mildenhall SSSI
Barnham Heath SSSI	How Hill Track SSSI
Beeches Pit, West Stow SSSI	Lakenheath Warren SSSI
Berner's Heath, Icklingham SSSI	Little Heath, BarnhamSSSI
Bridgham and Brettenham Heaths SSSI	Old Bodney Camp SSSI
Cavenham - Icklingham Heaths SSSI	Rex Graham Reserve SSSI
Cranwich Camp SSSI	Stanford Training Area SSSI
Cranberry Rough, Hockham SSSI	Thetford Golf Course and Marsh SSSI
Deadman's Grave, Icklingham SSSI	Thetford Heath SSSI
East Wretham Heath SSSI	Wangford Warren and Carr SSSI
Eriswell Low Warren SSSI	Warren Hill SSSI
Field Barn Heaths, Hilborough SSSI	Weather and Horn Heaths SSSI
Foxhole Heath, Eriswell SSSI	Weeting Heath SSSI
Gooderstone Warren SSSI	West Stow Heath SSSI
Grime's Graves SSSI	

The Favourable Condition Table will be used by English Nature and other relevant authorities to determine if a site is in favourable condition. Favourable condition is achieved when the targets given below are met.

The favourable condition table should inform the scope and nature of any 'appropriate assessment' under the Habitats Regulations, but an appropriate assessment will also require consideration of issues specific to the individual plan or project. The favourable condition table does not by itself provide a comprehensive basis on which to assess plans and projects as required under Regulations 20-21, 24, 48-50 and 54 - 85. The scope and content of an appropriate assessment will depend upon the location, size and significance of the proposed project. English Nature will advise on a case by case basis.

Following an appropriate assessment, competent authorities are required to ascertain the effect on the integrity of the site. The integrity of the site is defined in para C10 of PPG9 as the coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified. The determination of favourable condition is separate from the judgement of effect upon integrity. For example, there may be a time-lag between a plan or project being initiated and a consequent adverse effect upon integrity becoming manifest in the condition assessment. In such cases, a plan or project may have an adverse effect upon integrity even though the site remains in favourable condition.

Annual counts for qualifying bird species will be used by English Nature, in the context of five year peak means, together with available information on UK population and distribution trends, to assess whether the SPA is continuing to make an appropriate contribution to the Favourable Conservation Status of the species across Europe.

Operational feature	Criteria feature	Attribute	Measure	Target	Comment
All habitats; heathland, acid grassland, chalk grassland and/or inland dune communities	Annex 1 populations of European importance: nightjar, woodlark	Extent and distribution of habitat	Area, measured periodically (frequency to be determined)	No significant decrease from reference level.	Methodology for assessing target to be determined. Reference level to be determined.
	Annex 1 populations of European importance: nightjar, woodlark	Disturbance	Reduction or displacement of birds, measured periodically (frequency to be determined)	No significant reduction or displacement of birds attributable to human disturbance in relation to reference level.	Methodology for assessing target to be determined. Reference level to be determined.
	Annex 1 population of European importance: nightjar	Food availability	Abundance of night-flying insects, measured periodically (frequency to be determined).	Presence and abundance of prey species should not deviate significantly from reference level.	Moths and beetles are important for nightjar. Methodology for assessing target to be determined. Reference level to be determined.
	Annex 1 population of European importance: woodlark	Food availability	Abundance of ground-surface invertebrates, measured periodically (frequency to be determined).	Presence and abundance of prey species should not deviate from reference level.	Including e.g. spiders, weevils, caterpillars. Methodology for assessing target to be determined. Reference level to be determined.
	Annex 1 population of European importance: nightjar	Vegetation characteristics	open ground with low vegetation (feeding), and sparse woodland / scrub cover (feeding, roosting).	No significant decrease in extent and proportions of open ground with predominantly low vegetation (feeding), and sparse woodland / scrub cover (feeding, roosting) from reference level.	Nightjar require vegetation mostly 20-60cm high with less than 50% tree/scrub cover overall. Reference level to be determined.

	Annex 1 population of European importance: woodlark	Vegetation characteristics	Extent and proportions of mix of shrub / tree cover (display), short-medium vegetation and bare ground (feeding, roosting, nesting), measured periodically (frequency to be determined).	No significant decrease in extent and proportions of mix of shrub / tree cover (display), short-medium vegetation and bare ground (feeding, roosting, nesting).	frequent bare patches under 0.5 ha within mosaic of short (under 5cm high) to medium (10-20cm high) ground vegetation, and small clumps of shrubs or trees. Methodology for assessing target to be determined. Reference level to be determined.
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SLR/NS



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cSAC: Waveney and Little Ouse Valley Fens Component SSSI: Weston Fen

Conservation Objectives for the European Interest features on the SSSI

The Conservation Objectives for the European interest on the SSSI are:

to maintain*, in favourable condition, the:

- Calcareous fens with *Cladium mariscus* and the species of the *Caricion davallianae*
- *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*)

to maintain*, in favourable condition, the habitats for the population of:

- Desmoulin's whorl snail (*Vertigo moulinsiana*)

* maintenance implies restoration if the feature is not currently in favourable condition.

The Conservation Objectives for the Waveney and Little Ouse Valley Fens candidate Special Area of Conservation are, in accordance with para C10 of PPG 9, the reasons for which the cSAC was designated.

The cSAC also includes land within Blo'Norton and Thelnetham Fens SSSI and Redgrave and Lopham Fens SSSI.

Favourable Condition Table for Weston Fen SSSI

The Favourable Condition Table will be used by English Nature and other relevant authorities to determine if a site is in favourable condition. Favourable condition is achieved when the targets given below are met.

The favourable condition table should inform the scope and nature of any ‘appropriate assessment’ under the Habitats Regulations, but an appropriate assessment will also require consideration of issues specific to the individual plan or project. The favourable condition table does not by itself provide a comprehensive basis on which to assess plans and projects as required under Regulations 20-21, 24, 48-50 and 54 - 85. The scope and content of an appropriate assessment will depend upon the location, size and significance of the proposed project. English Nature will advise on a case by case basis.

Following an appropriate assessment, competent authorities are required to ascertain the effect on the integrity of the site. The integrity of the site is defined in para C10 of PPG9 as the coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified. The determination of favourable condition is separate from the judgement of effect upon integrity. For example, there may be a time-lag between a plan or project being initiated and a consequent adverse effect upon integrity becoming manifest in the condition assessment. In such cases, a plan or project may have an adverse effect upon integrity even though the site remains in favourable condition.

Calcareous fens with *Cladium mariscus* and the species of the *Caricion davallianae*

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Basin / floodplain mire (E32 / E33)	NVC types , S25, S26	Extent	Area (ha)	No loss without prior consent	
		Sward composition	Combined cover of grasses, sedges, rushes and tall herbaceous dicotyledons	At least 75%	
			Frequency of positive indicators (DAFOR scale): <i>Angelica sylvestris</i> , <i>Cirsium arvense</i> *, <i>Calliergon cuspidatum</i> , <i>Caltha palustris</i> , <i>Eupatorium cannabinum</i> , <i>Filipendula ulmaria</i> , <i>Iris pseudacorus</i> , <i>Juncus subnodulosus</i> , <i>Lythrum salicaria</i> , <i>Mentha aquatica</i> , <i>Menyanthes trifoliata</i> *, <i>Peucedanum palustre</i> , <i>Phalaris arundinacea</i> *, <i>Valeriana officinalis</i> , <i>Vicia cracca</i> * Not identified in the 1991 NVC survey	At least one species frequent and two species occasional	
			Frequency or cover of <i>Urtica dioica</i>	For S25: No more than occasional For S26: Is not dominant (forming pure stands) over more than 10% of the mire	
			Frequency of <i>Galium aparine</i> (DAFOR scale)	No more than locally frequent	
			Frequency or cover of tree / scrub spp.	No more than 5% cover, if in discrete stands, or no more than occasional throughout the sward	
		Sward structure †	Litter in a more or less continuous layer	No more than 15cm deep over 50% of area	

	<i>Vertigo moulinsiana</i>	Structure and composition of marginal vegetation	Area of stand of approximate vegetation, estimated by eye.	Tall lightly grazed blocks of <i>Glyceria maxima</i> , <i>Cladium mariscus</i> , sparse <i>Phragmites</i> and/or <i>Carex riparia</i> and/or <i>acutiformis</i> . Unbroken blocks extending at least 100m ² in extent for every 1000m ² in extent.	
		Water table	<p>1. Depth below ground level;</p> <p>2. Vegetation indicators of water level changes. (levels falling)</p> <p>3. Vegetation indicators of water level changes. (Levels rising)</p>	<p>1. Water table remaining within 5cm above or below the ground surface for 9 months of the year.</p> <p>Not more than 10% (occasional) replacement of preferred dominant species by plants of drier conditions. Eg nettles, willowherbs, or by dense tall reed. monocots by plants preferring drier conditions</p> <p>Not more than 10% (occasional) replacement of tall monocots by plants preferring wetter conditions, eg <i>Rorippa nasturtium-aquaticum</i>, <i>Apium nodiflorum</i> or <i>Berula erecta</i></p>	<i>V. moulinsiana</i> requires highly humid conditions which are met by a high water table below the stands of vegetation in which it lives. Unfavourably wet conditions can result from prolonged flooding in Summer or water being penned too high.
		Vegetation height	Height	Average height of the stand of no less than 15 cm.	<i>V. Moulinsiana</i> requires tall leaves on which it lives most of the year. Heavy grazing and mowing may be detrimental if it removes mostly taller clumps.
		Shading by shrubs and trees (eg willow, alder, guelder rose)	Percentage of habitat with potential for supporting the snail	Less than 10%	

		Water quality	EA water quality data	Limits of tolerance not known, but it is assumed that they should remain within the long-term average range. Water must be moderately calcareous.	Although the snail lives out of water, water quality may influence vegetation structure and perhaps the micro flora living on the leaf surfaces where the snail feeds.
		Litter	Approximate thickness	A thin layer between 2-10cms deep, resulting from normal winter die-back	The snail overwinters in the litter.

† Discretionary attribute/measure/target

***Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*)**

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Unimproved marshy grassland	M24	*Extent	Total are (ha), mapped in relation to baseline (ie first available map of interest feature when/after notified), in period early June - end of August, measured annually if possible.	No reduction in area and any consequent fragmentation without prior consent	Recoverable reduction = unfavourable; non-recoverable reduction = partially destroyed. Temporary reductions related to natural variation in hydrological conditions should be noted as such where information allows.
		Sward composition: positive indicator species	Record the frequency of positive indicator species from the list below to give an overall total of 2 frequent and 3 occasional. Record in period early June - end of August, measured annually if possible. <i>Anagallis tenella</i> , <i>Angelica sylvestris</i> , <i>Carum verticillatum*</i> , <i>Cirsium dissectum</i> , <i>Erica tetralix*</i> , <i>Eupatorium cannabinum</i> , <i>Filipendula ulmaria</i> , <i>Galium uliginosum/Galium palustre*</i> , <i>Lotus pedunculatus</i> , <i>Narthecium ossifragum*</i> , <i>Orchidaceae spp.</i> , <i>Pedicularis sylvatica*</i> , <i>Potentilla erecta</i> ,	Overall total of at least two species/taxa frequent plus at least three species occasional throughout the sward.	Choice of species related to NVC type, restriction to unimproved grassland and wetness characteristics of habitat, all satisfactory when inside target. Among possible species that could be used, choice further restricted by ease of identification, visibility in recording period.

			<p><i>Serratula tinctoria</i>*, small blue-green <i>Carex</i> spp. (leaves less than 5mm wide) (<i>C. flacca</i>, <i>C. nigra</i>, <i>C. panicea</i>), <i>Sphagnum</i> spp.*, <i>Succisa pratensis</i>, <i>Valeriana dioica</i>, <i>Valeriana officinalis</i>, <i>Viola palustris</i>*. * Not identified in the 1991 survey.</p>		
		*Sward composition: frequency and cover of <i>Molinia caerulea</i>	Record the frequency and % cover of <i>Molinia caerulea</i> . Record in period early June - end of August, measured annually if possible.	At least frequent throughout the sward but no more than 80% cover	<i>Molinia</i> is a characteristic component of the community and should thus be at least frequent. However, increasing cover exceeding upper target is indicative of insufficient management by grazing or cutting.
		*Sward composition: negative indicator species	Record the frequency and % cover of negative indicator species. Record in period early June- end of August, measured annually if possible. <i>Cirsium arvense</i> , <i>Cirsium vulgare</i> , <i>Rumex crispus</i> , <i>Rumex obtusifolius</i> , <i>Urtica dioica</i> .	No species more than occasional throughout the sward or singly or together more than 5% cover	Invasive species chosen to indicate problems of eutrophication and disturbance from various sources when outside target eg poaching, stock feeding.
		*Sward composition: cover of <i>Juncus</i> spp	Record the % cover of <i>Juncus</i> species from groups A and B. Record in period early June - end of August, measured annually if possible. Group A: jointed rushes (<i>Juncus acutiflorus</i> , <i>J. articulatus</i> , <i>J. subnodulosus</i>) Group B: <i>Juncus conglomeratus</i> , <i>J. effusus</i> and <i>J. inflexus</i> .	All species combined no more than 80% cover, of which no more than 50% made up of spp. from Group B	<i>Juncus</i> spp can be characteristic components of the community. However, increasing cover is indicative of insufficient management by grazing or cutting. Group B species may indicate problems of eutrophication from various sources when outside target eg stock feeding, fertiliser use.
		*Sward composition: negative indicator species.	Record the % cover of negative indicator species. Record in period early June - end of August, measured annually if possible.	No more than 20% cover.	This species may be indicative of disturbance from various sources when outside target eg poaching, stock feeding.

			<i>Cirsium palustre.</i>		
		*Sward composition: negative indicator species.	Record the % cover of negative indicator species. Record in period early June - end of August, measured annually if possible. <i>Deschampsia cespitosa</i>	No more than 10% cover.	Increasing cover of <i>Deschampsia cespitosa</i> outside target may be indicative of insufficient management by grazing or cutting, overgrazing, disturbance by excessive poaching or altered hydrology eg reduced water movement in the soil profile during the year resulting in anaerobic conditions. Increasing cover may lead to reduced species richness in the community.
		*Sward composition: negative indicator species	Record the % cover or frequency of negative indicator species in period early June - end of August, measured annually if possible. All tree and scrub species excluding <i>Salix repens</i> and <i>Myrica gale</i> , considered together. NB If scrub/tree species in pastures are more than occasional throughout the sward but less than 5% cover, they are soon likely to become a problem if grazing levels are not sufficient or if scrub control is not being carried out.	No more than 5% cover.	Invasive species outside target shows that habitat is not being managed sufficiently eg lack of or insufficient grazing/cutting
		*Sward composition: % cover of <i>Phragmites australis</i>	Record the % cover of <i>Phragmites australis</i> in period early June - end of August, measured annually if possible.	No more than 10% cover.	Increasing cover of <i>Phragmites australis</i> outside target may be indicative of insufficient management by grazing or cutting. Lack of management may ultimately convert the community to tall-fen in some geographical areas.
		Sward composition: % cover of <i>Myrica gale</i> .	Record the % cover of <i>Myrica gale</i> in period early June - end of August, measured annually if possible.	No more than 10% cover	If <i>Myrica</i> cover outside target this shows that habitat is not being managed sufficiently eg lack of or insufficient grazing/cutting
		Sward composition:	Record the % cover of negative indicator species. Record in period	No more than occasional throughout the sward	Outside target can discourage hay/grazing management because the

		negative indicator species.	early June - end of August, measured annually if possible. <i>Senecio aquaticus</i>		species is believed to be toxic to livestock, and is palatable when dry.
		Sward structure: average height	Record sward height in period early June - end of August, measured annually if possible. (Upper target refers to pastures only.)	M24a Sward greater than 5 cm (excluding <i>Juncus</i> spp.) but no more than 25% over 60 cm	Sward height above upper target shows that habitat is not being managed sufficiently eg lack of or insufficient grazing or if below lower target, is being overgrazed.
				M24b Sward greater than 2 cm (excluding <i>Juncus</i> spp.) but no more than 25% over 15 cm	
		Sward structure: litter	Record cover of litter where in a more or less continuous layer, distributed either in patches or in one larger area. Record in period early June - end of August for pastures, measured annually if possible.	Total extent no more than 25% of the sward	Outside target indicates biomass removal is insufficient eg lack of or insufficient grazing or not cut for hay.
		Sward structure: bare ground	Record extent of bare ground distributed through the sward, noticeable without disturbing the vegetation. Record in period early June - end of August, measured annually if possible	No more than 10% cover	Outside target indicates problems with stock management eg poaching, supplementary feeding.

† Discretionary attribute/measure/target



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pSAC: River Wensum
Component SSSI: River Wensum

Conservation Objectives for the European Interest features on the SSSI

The Conservation Objectives for the European interest features on the SSSI are:

to maintain*, in favourable condition, the:

- Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation

to maintain*, in favourable condition, the habitats for the population of:

- Bullhead (*Cottus gobio*)
- Brook lamprey (*Lampetra planeri*)
- White-clawed crayfish (*Austropotamobius pallipes*)
- Desmoulin's whorl snail (*Vertigo moulinsiana*)

* maintenance implies restoration, if the feature is not in favourable condition

The Conservation Objectives for the River Wensum possible Special Area of Conservation are, in accordance with para C 10 of PPG 9, the reasons for which the pSAC was proposed.

Favourable Condition Table for River Wensum SSSI

The Favourable Condition Table will be used by English Nature and other relevant authorities to determine if a site is in favourable condition. Favourable condition is achieved when the targets given below are met.

The Favourable Condition Table should inform the scope and nature of any 'appropriate assessment' under the Habitats Regulations, but an 'appropriate assessment' will also require consideration of issues specific to the individual plan or project. The favourable condition table does not by itself provide a comprehensive basis on which to assess plans and projects as required under Regulations 20-21, 24, 48-50 and 54 - 85. The scope and content of an 'appropriate assessment' will depend upon the location, size and significance of the proposed project. English Nature will advise on a case-by-case basis.

Following an 'appropriate assessment', competent authorities are required to ascertain the effect on the integrity of the site. The integrity of the site is defined in para C10 of PPG9 as the coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified. The determination of favourable condition is separate from the judgement of effect upon integrity. For example, there may be a time-lag between a plan or project being initiated and a consequent adverse effect upon integrity becoming manifest in the condition assessment. In such cases, a plan or project may have an adverse effect upon integrity even though the site remains in favourable condition.

Notes on the distribution of features within the River Wensum pSAC:

Species	Distribution
<i>Ranunculus</i> vegetation	This community is best represented in the upper reaches of the river, above the confluence with the River Tat, but is also present in the middle reaches of the river where it flows over a chalk bed.
Bullhead	Fisheries Surveys carried out by the Environment Agency demonstrate that the bullhead occurs at higher densities in the upper reaches of the river with progressively lower densities through the mid to lower reaches of the river.
Brook lamprey	Fisheries Surveys carried out by the Environment Agency demonstrate that the brook lamprey occurs at higher densities in the upper reaches of the river with progressively lower densities through the mid to lower reaches of the river.
White-clawed crayfish	Surveys by English Nature and the Environment Agency demonstrate that at the present time, the white-clawed crayfish is found in the upper reaches of the River Wensum and its tributaries. However, its distribution is not continuous, but separated into foci (often at mills or bridges) and separated by impounded reaches of the river which are characterised by silt substrates.
Desmoulin's whorl snail	The distribution of Desmoulin's whorl snail is incompletely known, and further survey work is planned. However, those sites that are known occur in the upper reaches of the river and are found both within and immediately adjacent to the boundary of the site.

Common targets for river habitat and selected species

Operational feature	Criteria features	Attribute	Measure	Targets	Comments
River	Floating formations of water crowfoot (<i>Ranunculus</i>)	Flow	Limits on licensed abstractions after modelling impacts. Audit every 6 years, if possible	Flow regime should be characteristic of the river. As a guideline, at least 90% of the naturalised daily mean flow should remain in the river	River flow affects a range of habitat factors of critical importance to designated interest features, including current velocity, water depth, wetted area, substrate quality, dissolved oxygen levels and water temperature. The maintenance of both flushing flows and base flows, based on natural hydrological processes, is vital. Detailed

	<p>bullhead</p> <p>brook lamprey</p> <p>white-clawed crayfish</p>		<p>via CAMS.</p>	<p>throughout the year at all points in the SAC.</p> <p>This supersedes the interim target of only protecting the 95 percentile flow for the river, as described in The Conservation Strategy for the River Wensum SSSI, drawn up by English Nature and the Environment Agency.</p>	<p>investigations of habitat-flow relationships may indicate that a more or less stringent threshold may be appropriate for a specified reach; however, a precautionary approach would need to be taken to the use of less stringent values. Naturalised flow is defined as the flow in the absence of abstractions and discharges. Abstraction is a major risk to ecological integrity but, the cumulative effects of further development within the catchment could make the river more flashy and in so doing, reduce base flows. The availability and reliability of data is patchy - long-term gauged data can be used until adequate naturalised data become available, although the impact of abstractions on historical flow records should be considered. The River Wensum is particularly vulnerable during drought years.</p> <p>The upper reaches of the river are fed by springs, rising from the chalk aquifer. These should be maintained. Headwater sections are particularly vulnerable to abstraction, and downstream migration of perennial heads, other than in drought conditions, is a sign of unfavourable condition.</p> <p>The natural gradient of the river is interrupted by fourteen weirs, many dating from the seventeenth and eighteenth centuries. This has given the river a “stepped” profile, with deep, slow-flowing ponded sections upstream of weirs, and shallow riffles and runs, downstream.</p>
	<p>Floating formations of water crowfoot (<i>Ranunculus</i>)</p> <p>bullhead</p> <p>brook lamprey</p> <p>white-clawed crayfish</p>	<p>Water quality</p>	<p>Biological class - Environment Agency’s General Quality Assessment scheme. Assess every 5 years.</p> <p>River Ecosystem Class. Assess against Environment Agency</p>	<p>bullhead - >=‘b’</p> <p>brook lamprey - >=‘b’</p> <p>white-clawed crayfish >=‘b’</p> <p>Desmoulin’s whorl snail >=‘b’</p> <p>In addition, no drop in class from existing situation.</p> <p>bullhead - >=RE2</p> <p>brook lamprey - >=RE2</p> <p>white-clawed crayfish >=RE3</p> <p>Desmoulin’s whorl snail >= RE2</p>	<p>Generally, water quality should not be injurious to any life stage. A wide range of water quality parameters can affect the status of interest features, but standard biological monitoring techniques provide a reasonably integrated picture in relation to many parameters. The Biological Module of the Environment Agency’s General Quality Assessment scheme is based on assessment of the macro-invertebrate community. All classified reaches within the site that should contain the interest feature under conditions of high environmental quality should comply with the targets given.</p> <p>The River Ecosystem Classification 1995 sets standards for dissolved oxygen, biochemical oxygen demand, total and un-ionised ammonia, pH, copper and zinc. It therefore, covers a number of water quality parameters which can cause problems within river systems. All classified reaches within the site that should contain the interest</p>

			monitoring results.	In addition, no drop in class from existing situation	feature under conditions of high environmental quality should comply with the targets given.
			Suspended solids (annual average).	bullhead - $\geq 25 \text{ mg l}^{-1}$ brook lamprey $\geq 25 \text{ mg l}^{-1}$ white-clawed crayfish $\geq 25 \text{ mg l}^{-1}$	Elevated levels of suspended solids can clog the respiratory structures of the listed species. Suspended solids measurements are also essential to the estimation of particulate loads within the river network (in combination with gauged flow data), which provides an indication of the risk of siltation problems. The target of 25 mg l^{-1} is based on the EC Freshwater Fish Directive. Annual maximum concentrations of suspended material in the River Wensum have increased threefold since recording began in 1977 and it is conspicuous that during this period there has been an increase in arable farming with a decrease in the extent of meadow and grassland in the catchment, and particularly on the floodplain
			Soluble Reactive Phosphorus (annual mean) (Total Reactive Phosphorus as measured by the Environment Agency is acceptable)	An annual average phosphate concentration of 0.05 mg/l from the upstream limits of the SSSI to the confluence of the River Wensum with the White Water (the tributary that drains from East Dereham), and 0.1 mg/l from that confluence to the downstream limit of the SSSI. (The effect of varying concentrations of phosphorous pollution on <i>Ranunculus</i> habitat in the River Wensum is under investigation through a PhD study. The targets detailed above may therefore be revised, depending upon the findings of this research.)	Elevated phosphorus levels may interfere with competitive interactions between different higher plant species and between higher plants and algae, leading to the loss of characteristic higher plants and large diurnal sags in dissolved oxygen levels. <i>Ranunculus</i> habitat is extremely vulnerable and can be replaced by <i>Potamogeton pectinatus</i> . The respiration of artificially large growths of benthic algae may generate poor substrate conditions for species such as the brook lamprey (in the larval stage). Current phosphorus levels in the river are recognised as being excessive. Under the Urban Waste Water Treatment Directive the River Wensum has recently been designated as a Sensitive Area (Eutrophic). Phosphorous removal will, therefore, be a statutory requirement at Fakenham and East Dereham Sewage Treatment Works by the end of 2004 and is currently being carried out on a voluntary basis by Anglian Water
	Floating formations of water crowfoot (<i>Ranunculus</i>)	River substrate	Silt content (Optimal form of measurement to be decided in consultation with	In fast moving reaches of the river, the channel should be dominated by clean gravels. On fast moving reaches of the	Siltation of riverine sediments, caused by high particulate loads and/or reduced scour within the channel, is a major threat to interest features. Elevated silt levels can interfere with the establishment of <i>Ranunculus</i> plants, and with egg and fry survival in brook lamprey and bullhead.

	bullhead brook lamprey white-clawed crayfish		the Environment Agency.)	river, the maximum silt content: Ranunculus - <20% in top 10cm of mid-channel gravels; brook lamprey -<10% in top 30cm of spawning substrates; bullhead - no excessive siltation on the surface of coarse substrates.	<p>The requirements of species vary depending upon use of the substrate. Some relate to the level of aeration within the substrate and some to the ability of the substrate to physically catch eggs or plant fragments in surface interstices. The target used for salmon on other SACs has been used for brook lamprey in the absence of species-specific information (although it is recognised that brook lamprey utilise only the top few centimetres for spawning).</p> <p>Monitoring suggests that silt input to the River Wensum has increased markedly over recent decades and in 1990 approximately 50% of the bed of the channel was covered by fine silt. It should be noted however that this figure partly reflects the fact that the river has been impounded at regular intervals. Sources of silt include run-off from arable land, land trampled by livestock, sewage, urban and industrial discharges.</p>
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Extra targets for floating formations of *Ranunculus* of plain and sub-mountainous rivers

Operational feature	Criteria feature	Attribute	Measure	Targets	Comments
River	Floating formations of water crowfoot (<i>Ranunculus</i>)	Extent and composition	Mapping of representative sample stretches (to be identified) in June or July every 3 years.	Presence of characteristic plant species; absence of indicators of unfavourable condition.	The community is dominated by <i>Ranunculus penicillatus</i> subsp <i>pseudofluitans</i> , and <i>Ranunculus circinatus</i> is occasionally present. Associated species include <i>Myriophyllum spicatum</i> , <i>Sparganium emersum</i> , and <i>Potamogeton perfoliatus</i> . with occasional beds of <i>Groenlandia densa</i> . The following species often occur along the river margins: <i>Phalaris arundinacea</i> ,

					<p><i>Sparganium erectum</i>, <i>Glyceria maxima</i>, <i>Butomus umbellatus</i> and <i>Oenanthe fluviatilis</i>. Further down stream, the chalk is overlain with boulder clay and river gravels resulting in aquatic plant communities more typical of a slow flowing river on mixed substrate</p> <p>In suitable fast-flowing reaches of the river, the in-channel vegetation should be dominated by this community. However, further survey work is necessary to establish the baseline extent of this vegetation in detail. The absence of <i>Ranunculus</i> and presence of blanket weed and other algae are signs of unfavourable condition. The dominance of <i>Potamogeton pectinatus</i> in the lower reaches of the river may also be indicative of nutrient enrichment.</p>
		Reproduction	Mapping of flowering <i>Ranunculus</i> in sample stretches (to be identified) every 3 years. Annual observations in June/July. Audit of consents every 3 years (Environment Agency and English Nature).	<i>Ranunculus</i> should be able to flower and set seed, in suitable habitat.	Flowering later than mid-July and weed cutting or other activities which do not leave patches (at least 25% in every 100 metres of river) to flower and set seed are indicators of unfavourable condition. Use of herbicides should be avoided.
		River form	Measure channel profile as baseline by RHS (?) and identify stretches for restoration. Audit progress with restoration every 6 years.	Channels should be generally characteristic of river type and appropriate to naturalised flow conditions.	Widening or deepening of channels, and extensive artificial reinforcement of banks, are indicators of unfavourable condition. Headwater sections are particularly vulnerable to reprofiling. Restoration of degraded channels to a more characteristic state should be undertaken, where practical, within a strategic framework and using techniques that work with nature. This may include removal of structures within rivers, after individual assessment of environmental impacts. It should be noted however, that in elevating the river level and water table of adjoining fens upstream, some of these structures are necessary to maintain suitable conditions for populations of the Desmoulin's whorl-snail. In addition, silt accumulations behind weirs can be valuable in impounded sections of river as the nursery habitat for the brook lamprey.
		Flow		See 'common targets'	

		Water quality		<i>See 'common targets'</i>	
		River substrate		<i>See 'common targets'</i>	

Extra targets for bullhead (*Cottus gobio*)

Operational feature	Criteria feature	Attribute	Measure	Targets	Comments
River	Bullhead (<i>Cottus gobio</i>)	Flow		<i>See 'common targets'</i>	
		Water quality		<i>See 'common targets'</i>	
		River substrate		<i>See 'common targets'</i>	
		Habitat structure	Extent of gravel/pebble-dominated substrate. (Assessment methods in this column to be agreed with Environment Agency.)	Maintain and where necessary restore	Females lay sticky eggs on the underside of stones. Larger stones on a hard substrate, providing clear spaces between the stream bed and the underside of pebbles/cobbles, are therefore important. There should be >5 cm water depth over riffles in the summer.
			Extent of slack-water refuges	Maintain and where necessary restore	These provide important refuge against high flow conditions. Suitable refuges include pools, submerged tree root systems and marginal vegetation with >5cm water depth.

			Extent of high canopy tree cover	Maintain intermittent cover [<i>where characteristic of the reach</i>]	The relative importance of shade compared to the provision of woody debris is unclear, but the maintenance of intermittent tree cover in conjunction with retention of woody debris ensures that habitat conditions are suitable.
			Extent of submerged higher plants	Maintain patchy cover [<i>where characteristic of the reach</i>]	The importance of submerged higher plants to bullhead survival is unclear, but it is likely that where such vegetation occurs it is used by the species for cover against predators. Weed-cutting should be limited to no more than ½ of channel width in a pattern of cutting creating a mosaic of bare substrate and beds of submerged plants.
			Extent of woody debris	There should be a presumption to retain woody debris in those reaches of the river where it occurs and a protocol should be agreed with the Environment Agency.	Bullheads are particularly associated with woody debris, where it is likely that it provides an alternative source of cover and spawning substrate. Woody debris is typically removed during maintenance operations, but it is important to retain as much as possible, particularly where other forms of refuge are in short supply.
			River form	Maintain and, where necessary, restore the characteristic physical form of the river channel.	The characteristic channel morphology provides the diversity of water depths, current velocities and substrate types necessary to fulfil the spawning, juvenile and migratory requirements of the species. The close proximity of different habitats facilitates movement to new preferred habitats with age. The water control structures have resulted in an alternation between shallow river reaches with riffle formations downstream, and deeper slow moving reaches with silty substrates upstream. Operations that widen, deepen and/or straighten the channel reduce variations in habitat. New operations that would have this impact are not acceptable within the SAC, whilst restoration may be needed in some reaches.
		Access	Artificial obstructions	No significant impediment to essential fish movement.	Vertical drops of more than 18-20 cm are sufficient to prevent upstream movement of adult bullheads. These will therefore prevent recolonisation of upper reaches affected by lethal pollution episodes, and will also lead to constraints on genetic interactions that may have adverse consequences. The removal of significant impediment to essential fish movement between reaches should therefore be investigated.

					It should be noted however, that some structures elevate the river level and water table of adjoining fens upstream and are therefore necessary to maintain populations of Desmoulin's whorl-snail. In addition, silt accumulations behind weirs can be valuable in impounded sections of river as the nursery habitat for the brook lamprey.
		Biological disturbance	Introductions	No stocking/transfers of bullhead unless agreed by English Nature to be in the best interests of the population.	Bullheads are relatively sedentary and interactions between populations in different parts of the catchment and in different catchments are likely to be limited, suggesting the existence of genetically discrete populations. Since they are of no angling interest, deliberate transfers between sites are unlikely to have been undertaken in the past, such that the genetic integrity of populations is likely to be intact.
				No stocking of other fish species at excessively high densities in spawning and nursery areas.	The presence of artificially high densities of salmonids and other fish will create unacceptably high levels of predatory and competitive pressure on juvenile and adult bullhead. Natural populations of brown trout have been enhanced for fly fishing by stocking since at least the beginning of the 1900's. Chub, barbel and grayling have all been introduced into the Wensum in varying quantities since the 1950's.
				Effective screening on all fish farm intakes and discharges	Escapes from fish farms are a form of uncontrolled introduction and should be prevented.
				Absence of non-native crayfish	Bullhead densities have been found to be negatively correlated with densities of non-native crayfish in the River Great Ouse, suggesting competitive and/or predator-prey interactions. The signal crayfish (<i>Pacifastacus leniusculus</i>) has been recorded from the river and it is thought that they may have entered the river through a fishery at Reepham. Measures should be taken to eliminate this species from the river.

Extra targets for brook lamprey (*Lampetra planeri*)

Operational feature	Criteria feature	Attribute	Measure	Targets	Comments
River	Brook lamprey (<i>Lampetra planeri</i>)	Flow		See 'common targets'	
		Water quality		See 'common targets'	
		River substrate		See 'common targets'	
		Habitat structure	Area of spawning habitat. (Assessment methods in this column to be agreed with the Environment Agency.)	Maintain and where necessary restore	This habitat is defined as well-oxygenated gravel/pebble-dominated (1.5-11cm) substrate of at least 10cm depth, overlain by a range of water depths (0.2-1.5m). Typical spawning locations are upstream of riffles and downstream of weirs.
			Area of nursery habitat	Maintain and where necessary restore. (The proposed removal of weirs to benefit bullheads, <i>Ranunculus</i> vegetation or	This habitat is defined as open-structure, aerated, silty and sandy substrates, between 2 and 40cm depth, typically overlain by less than 0.5m of water. Slack-water channel margins are particularly important, whilst silt accumulations behind weirs can also be valuable in impounded sections.

				white-clawed crayfish should therefore be assessed against possible losses of silty nursery habitats for brook lamprey).	
			Area of emergent riparian vegetation	Maintain a high extent throughout the river system	Emergent vegetation within marginal nursery habitat stabilises the substrate and greatly increases habitat suitability.
			Extent of bankside tree cover	Maintain intermittent cover where characteristic of the reach	This helps to provide temperature micro-gradients within the channel, which provides greater flexibility in habitat selection.
			River form	Maintain and where necessary restore the characteristic physical form of the river channel	The characteristic channel morphology provides the diversity of water depths, current velocities and substrate types necessary to fulfil the spawning, juvenile and migratory requirements of the species. On the River Wensum, these habitats are present, but their sequence has been modified by a succession of weirs. The proximity of different habitats facilitates movement to new preferred habitats with age. Operations that widen, deepen and/or straighten the channel reduce variations in habitat. New operations that would have this impact are not acceptable within the SAC, whilst restoration may be needed in some reaches.
		Access	Artificial obstructions	No significant impediment to essential fish movement	Lampreys can pass some potential barriers by attaching themselves to structures or river banks by their suckorial discs and creeping up by strong bursts of swimming. In the case of brook lamprey, records suggest that the highest densities of population occur in the upper reaches of the river and its tributaries, and the issue may therefore be of lesser significance to this species than the other two British species which migrate from the sea or lower river reaches. However, where appropriate, the removal of artificial barriers should be considered as these may significantly impair adults from reaching existing and historical spawning grounds. It should be noted that some structures elevate the river level and water table of adjoining fens upstream and are therefore necessary to maintain populations of the Desmoulin's whorl-snail.
		Biological disturbance	Introductions	No stocking/transfers of lampreys unless agreed by	It is uncertain whether there are significant genetic differences between lamprey populations of the same species. Since they are of no

				English Nature to be in the best interests of the population.	angling interest, deliberate transfers between sites are unlikely to have been undertaken in the past, such that the natural genetic character of populations is likely to be intact. Any agreed introductions should involve local stock as a precaution.
			Exploitation	Zero exploitation until further notice	Lampreys have recently become popular in the UK as bait for pike-fishing. There are also indications that UK populations are sought after as a delicacy in Europe, where stocks are declining. Adult lampreys are usually caught by trapping, whilst juvenile lampreys can be removed by sieving, netting or digging out nursery habitat. Anecdotal evidence of adult trapping of sea and river lampreys suggests heavy losses of fish on some rivers. In the absence of adequate knowledge of population dynamics and sustainable yields, exploitation of any lamprey species is not acceptable within SACs.

Extra targets for white-clawed crayfish (*Austropotamobius pallipes*)

Operational feature	Criteria feature	Attribute	Measure	Targets	Comments
River	White-clawed crayfish (<i>Austropotamobius pallipes</i>)	Water quantity		See 'common targets'.	
		Water quality		See 'common targets'.	
		Habitat structure	Extent of cobbles/ boulders	Maintain to an extent characteristic of the river type	Where they occur naturally, cobbles and boulders are used extensively by crayfish as refuge. Engineering works can result in the loss of large material - any works should at least replace the pre-works availability of such refuges.
			Extent of large woody debris	There should be a presumption to retain woody debris in those reaches of the river where it occurs and a protocol should be agreed with the Environment Agency.	Where they are present, fallen branches and trunks are used extensively by crayfish as refuge. Woody debris is typically removed during maintenance operations, but it is important to retain as much as possible, particularly where other forms of refuge are in short supply.
			Density of bankside refuges	Submerged tree root systems and/or crevices	These provide important refuges and are often lost during engineering operations. Any works should at least replace the

				in banksides should be available at intervals	pre-works availability of refuges.
			Extent of submerged and marginal vegetation	Maintain patchy cover where characteristic of the river type.	Submerged higher plants provide cover away from the banks, and also represent a valuable food source. Marginal emergents also provide important cover and feeding opportunities. Vegetation management should be limited to no more than 50% of the channel width (submerged plants) and 50% of bank length (marginal fringe).
			Extent of overhanging riparian vegetation	Should be present intermittently along the bank throughout the year.	This should cover at least 10% of bank length, distributed in patches along the margins, and considerably more where other forms of refuge are in short supply.
			Extent of bankside tree cover	Maintain to an extent characteristic of the river type	Overhanging trees provide valuable shade and food sources, and additionally supply woody debris to the river. Submerged tree-root systems provide important cover and refuges from flood flows.
			River form	Maintain and, where necessary, restore the characteristic physical form of the river channel	A natural channel morphology provides a diversity of refuge and feeding opportunities. The proximity of different refuges facilitates foraging and the movement of individuals to different habitats with age. Operations that widen, deepen and/or straighten the channel reduce variations in habitat. New operations that would have this impact are not acceptable within the SAC, whilst restoration may be needed in some reaches.
		Biological disturbance	Introductions	No stocking/transfers of white-clawed crayfish unless agreed by English Nature to be in the best interests of the population.	Little work has been undertaken on crayfish genetics. This advice takes the precautionary principle and assumes genetic diversity needs to be maintained and that there may be genetic differences between populations that could be of conservation significance. Care should be taken in any captive breeding programmes that genetic diversity is not reduced by in-breeding.
				No stocking of fish species at excessively high densities	The presence of artificially high densities of fish creates unacceptably high levels of predatory pressure on juvenile crayfish. Natural populations of brown trout have been enhanced for fly fishing by stocking since at least the beginning of the 1900's.

					Chub, barbel and grayling have all been introduced into the Wensum in varying quantities since the 1950's.
				Effective screening on all fish farm intakes and discharges	Escapes from fish farms are a form of uncontrolled introduction and should be prevented.
				Absence of non-native crayfish species	Once non-native crayfish species are established in a water body, native populations are usually eliminated quite rapidly, if not by competition and predation then by crayfish plague. The signal crayfish (<i>Pacifastacus leniusculus</i>) has been recorded from the river and it is thought that they may have entered the river through a fishery at Reepham. Measures should continue to control their spread and, if possible, reduce their numbers.
				Absence of individuals infected with crayfish plague	Crayfish plague can be introduced by the entry of non-native crayfish species into a site, but also by a variety of other routes, including contaminated equipment (nets, boots etc.) and stocked fish from infected waters. Outbreaks of crayfish plague typically result in 100% mortalities, unless there are isolated headwaters with crayfish in the catchment. This target requires that the utmost care is taken in terms of fish stocking and general surveying/monitoring to ensure that plague vectors are not introduced. Disinfection or thorough drying of equipment (or perhaps dedicated equipment for use only in native crayfish rivers) and sourcing of stocked fish from uninfected waters are vital elements.
				Thelohianiasis (Porcelain Disease) should not affect more than 10% of the population	This disease rarely causes mass mortalities and may be present in a population at low levels without apparent harm. However, a prevalence higher than 10% is of concern.

Extra targets for Desmoulin's whorl snail (*Vertigo moulinsiana*)

Operational feature	Criteria feature	Attribute	Measure	Targets	Comments
rivers fens	<i>Vertigo moulinsiana</i>	structure and composition of marginal vegetation	Length or area of stand of appropriate vegetation	<p>Once the baseline extent has been established, this should be maintained over appropriate lengths of river or area of fen or pool margin [length of river or area of fen or swamp, and number of sample stretches to be decided locally once the baseline has been established].</p> <p>Suitable vegetation will be dense, unbroken stands of <i>Glyceria maxima</i>, <i>Carex riparia</i>, <i>C. acutiformis</i>, <i>Cladium mariscus</i> and/or sparse <i>Phragmites</i> and <i>Phalaris arundinacea</i>. It may occur on dicotyledons such as <i>Petasites hybridus</i>.</p>	<p>A detailed vegetation survey is required on the River Wensum SAC as the base-line extent of suitable vegetation on the river-bank and adjacent fens is not currently known.</p> <p>It is expected that traditional and accepted river management will cause local deterioration of some stands but the aim is to ensure that habitat in appropriate condition is present at frequent intervals along a river corridor. The snail appears to be able to colonise new adjacent stands rapidly, and closely spaced, fragmented patches may provide acceptable conditions for this species.</p> <p>Management of bank-side paths resulting in the steepening of the profile of the riverbank, and thus reducing the tall, bank-side vegetation to an unsuitably thin strips would be detrimental to the preferred habitat of <i>V. moulinsiana</i>. In addition, the separation of stands of fen from the river margin by regularly mown paths through the fen, and building up of paths above the water table of the fen would also be detrimental to the preferred habitat of <i>V. moulinsiana</i>.</p>
rivers fens	<i>Vertigo moulinsiana</i>	Populations outwith the boundary of the site	Recognise the importance of colonies adjacent to the site	Maintain known colonies of <i>V. moulinsiana</i> that occur in fen vegetation adjacent to the site.	A number of the known colonies occupy fen vegetation on adjacent ground, outwith the boundary of the SAC. These may be of importance for the dynamic process of colonisation and recolonisation of suitable vegetation along the river corridor, including ground within the boundary of the SAC.
rivers		water table	1. The depth of the water table	1. Water table must be close to the surface so that the ground remains	<i>V. moulinsiana</i> requires highly humid conditions which are met by a high water table below the stands of vegetation in

fens			<p>below ground level;</p> <p>2 & 3. Indications from changes in the species composition of the fen vegetation that the level of the water table has been either significantly reduced or elevated</p>	<p>squelchy all year, i.e. never drying out, so that, even in high summer, water will rise when the soil is trodden. Winter flooding is permissible.</p> <p>2. Not more than 10% (occasional on the DAFOR scale) replacement of preferred dominant species by dense tall reed or by plants of drier conditions, e.g. <i>Urtica dioica</i>, <i>Epilobium hirsutum</i>, and low grasses invading the litter layer, within pre-selected stands (as selected for measuring extent).</p> <p>3. Not more than 10% (occasional on the DAFOR scale) replacement of tall monocotyledons by plants preferring wetter conditions, e.g. <i>Rorippa nasturtium-aquaticum</i>, <i>Apium nodiflorum</i> and <i>Berula erecta</i>.</p>	<p>which it lives. Unfavourably wet conditions can result from prolonged flooding in summer or water penning being set too high.</p> <p>Current research (2000-01) will refine acceptable limits and measures for soil moisture.</p> <p>The maintenance of some areas of suitable fen vegetation will be dependant upon the continued operation of weirs, which maintain the watertable upstream at an artificially high level. If proposals are considered for the removal or modification of weirs or other artificial obstructions, this should only proceed after consideration of the effects on populations of <i>V. moulinsiana</i></p>
rivers fens		vegetation height	height of bulk of the vegetation	Average height of the stands no less than 50 cm.	<p><i>V. moulinsiana</i> requires tall leaves on which it lives for most of the year. Heavy grazing and mowing may be detrimental if it removes most taller clumps.</p> <p>The mowing of reed-beds may be acceptable if it is carried out as part of a mosaic of small polygons with a rotation of four or more years., while leaving some stands on a longer rotation of ten or more years, or with no mowing.</p> <p>The mowing of short sections of the river bank is acceptable if carried out at intermittent points along the river bank. If repeated mowing of whole lengths of river frontages is carried out, leaving no tall vegetation, then this would be detrimental to the preferred habitat of <i>V. moulinsiana</i>.</p> <p>The overall aim is to ensure that in the course of traditional and accepted river management, local deterioration of some</p>

					stands will only occur within a wider dynamic mosaic where some elements of the mosaic are forever moving from favourable to un-favourable and back to favourable.
rivers fens		shading by shrubs and trees (e.g. willow, alder)	proportion of habitat	Less than 10% increase in area of shade, compared to extent on the baseline map.	
rivers fens	<i>Vertigo moulinsiana</i>	Water quality	See 'common targets'	See 'common targets'	Although the snail lives out of the water, water quality may influence vegetation structure and perhaps the microflora living on the leaf surfaces where the snail feeds, and chemical quality may directly affect the snail when it is submerged during floods. Future experience and research may indicate that these variables are inapplicable to <i>V. moulinsiana</i> .

Additional parameters to consider within appropriate assessments

A range of specific parameters may be relevant to the assessment of the likely impact of a plan or project in addition to those specified in the favourable condition table. This should not be considered as an exhaustive list but indicates some key areas of concern. It should be noted that there are natural gradients of water chemistry along the length of the River Wensum, reflecting changes in the underlying geology.

Water column parameters

Consideration of the effects of **heavy metals, herbicides, pesticides** (particularly **sheep dip chemicals**) and **hydrocarbons** is essential. In particular, species such as white-clawed crayfish are highly susceptible to even very low concentrations of sheep dip. The risks of impact on *Ranunculus* habitat of riparian applications of atrazine and isoproturon on maize crops are also of particular concern.

Water hardness is a key issue for a number of species, particularly white-clawed crayfish, which almost always occurs in waters with a hardness of >10mg CaCO₃. In relation to Desmoulin's whorl snail, it is advised that assessments for projects must take account of the snail's need for water whose hardness must not fall below value expected for the catchment. The activity most likely to interfere with water hardness is the mass transfer of water from areas with different geologies.

Effects on **temperature regime** may have important consequences for a number of species. For instance, crayfish breeding is initiated by an extended period of water temperatures below 10 deg C during the autumn, and may be adversely affected by heated discharges.

Substrate quality

Elevated **sediment phosphorus** levels may lead to excessive growths of tolerant rooted-macrophytes and benthic algae, and may also result in enhanced release of soluble phosphorus to the water column.

Sediment oxygen levels are important to the survival of lamprey eggs and ammocoetes. Inorganic silt can interfere with aeration within coarse substrate, but in both coarse and fine substrate the sediment oxygen demand is a key consideration, driven by the presence of degradable organic matter. In siltbeds, levels of organic matter that generate anoxia or near-anoxia will make the habitat unsuitable for lampreys.

Guidance on verifying favourable condition in relation to designated species

Assessment of the population will help to determine whether the measures taken within the site to protect the population and its habitat are adequate. The following criteria are suggested for determining whether a population is in a favourable state both within SACs and in its wider range. This guidance will be refined, when further planned research into monitoring and population assessment protocols has been undertaken.

English Nature is putting forward criteria for discussion with the Environment Agency and others. No decision has been taken on the frequency and extent of any monitoring programme.

Species	Attribute	Target	Comments
Bullhead	Adult densities	There should be no reduction in densities from existing levels, and in any case no less than 0.5 m ⁻²	Routine Environment Agency monitoring is not capable of providing suitable data. A least-cost methodology for monitoring this attribute is being investigated, involving the sampling of representative reaches within an SAC.
	Age structure	At least 3 year-classes should be present at significant densities in upland rivers, 4 in lowland rivers.	As above
Brook lamprey	Adult densities, age structure etc.	No advice available at present	As above
White-clawed crayfish	Spawning	Berried females present during the period November to April.	As above
	Population densities	These should not differ significantly from those expected for the river type/reach under conditions of high physical and chemical quality, and in any case should not drop below recent levels.	As above



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pSPA: Breckland
cSAC: Breckland
Component SSSI: Weeting Heath

Conservation objective for the European Interest on the SSSI

The conservation objectives for the European interests on the SSSI are :

to maintain*, in favourable condition, the:

- Semi-natural dry grasslands and scrubland facies: on calcareous substrates (*Festuco-Brometalia*)

to maintain*, in favourable condition, the habitats for the populations of the particular reference to:

Annex 1 bird species⁺, of European importance, with

- heathland
- acid grassland
- chalk grassland and/or inland dune communities

+ Woodlark, Nightjar, Stone Curlew

* maintenance implies restoration if the feature is not currently in favourable condition.

The Conservation Objectives for Breckland proposed Special Protection Area and Breckland candidate Special Area of Conservation are, in accordance with para C 10 of PPG 9, the reasons for which the pSPA was proposed and the SAC designated .

The Breckland cSAC and the Breckland pSPA include land within:

Barnhamcross Common SSSI	Gooderstone Warren SSSI
Berner's Heath, Icklingham SSSI	Grime's Graves SSSI
Bridgham and Brettenham Heaths SSSI	Lakenheath Warren SSSI
Cavenham - Icklingham Heaths SSSI	Stanford Training Area SSSI
Cranwich Camp SSSI	Thetford Golf Course and Marsh SSSI
Deadman's Grave, Icklingham SSSI	Thetford Heath SSSI
East Wretham Heath SSSI	Wangford Warren and Carr SSSI
Field Barn Heaths, Hilborough SSSI	Weather and Horn Heaths SSSI
Foxhole Heath, Eriswell SSSI	Weeting Heath SSSI

The Breckland cSAC also includes land within:

Maidencross Hill SSSI	RAF Lakenheath SSSI
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The Breckland pSPA also includes land within

Barnham Heath SSSI	Little Heath, Barnham SSSI
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Beeches Pit, West Stow SSSI	Old Bodney Camp SSSI
Cranberry Rough, Hockham SSSI	Rex Graham Reserve SSSI
Eriswell Low Warren SSSI	Warren Hill SSSI
High Lodge, Mildenhall SSSI	West Stow Heath SSSI
How Hill Track SSSI	

The Favourable Condition Table will be used by English Nature and other relevant authorities to determine if a site is in favourable condition. Favourable condition is achieved when the targets given below are met.

The favourable condition table should inform the scope and nature of any 'appropriate assessment' under the Habitats Regulations, but an appropriate assessment will also require consideration of issues specific to the individual plan or project. The favourable condition table does not by itself provide a comprehensive basis on which to assess plans and projects as required under Regulations 20-21, 24, 48-50 and 54 - 85. The scope and content of an appropriate assessment will depend upon the location, size and significance of the proposed project. English Nature will advise on a case by case basis.

Following an appropriate assessment, competent authorities are required to ascertain the effect on the integrity of the site. The integrity of the site is defined in para C10 of PPG9 as the coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified. The determination of favourable condition is separate from the judgement of effect upon integrity. For example, there may be a time-lag between a plan or project being initiated and a consequent adverse effect upon integrity becoming manifest in the condition assessment. In such cases, a plan or project may have an adverse effect upon integrity even though the site remains in favourable condition.

Annual counts for qualifying bird species will be used by English Nature, in the context of five year peak means, together with available information on UK population and distribution trends, to assess whether the SPA is continuing to make an appropriate contribution to the Favourable Conservation Status of the species across Europe.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Unimproved calcareous grassland	CG7b,e	*Extent	Total area (ha), mapped in relation to a site-specific reference level to be determined, in period end April-mid July.	No reduction in area and any consequent fragmentation without prior consent	Recoverable reduction = unfavourable; non-recoverable reduction = partially destroyed. Excludes bare ground associated with rabbit warrens (see below).
		*Sward composition: positive indicator species	Record the frequency of positive indicator species in period end April-mid July. <i>Aira</i> spp., <i>Aphanes</i> spp., <i>Astragalus danicus</i> , <i>Centaurium erythraea</i> , <i>Cladonia</i> spp, <i>Dianthus deltoides</i> , <i>Erigeron acer</i> , <i>Erodium cicutarium</i> , <i>Fragaria vesca</i> , <i>Galium verum</i> , <i>Helianthemum nummularium</i> , <i>Leontodon hispidus/L. saxatilis</i> , <i>Lotus corniculatus</i> , <i>Ornithopus perpusillus</i> , <i>Pilosella officinarum (Hieracium pilosella)</i> , <i>Plantago coronopus</i> , <i>Rumex acetosella</i> , <i>Sedum acre</i> , <i>Teesdalia nudicaulis</i> , <i>Thymus</i> spp.	At least two species/taxa frequent and four species/taxa occasional throughout the sward	Choice of species related to NVC type and restriction to unimproved grassland, considered satisfactory when inside target. Among possible species that could be used, choice further restricted by ease of identification, visibility in recording period.
		*Sward composition: negative indicator species	Record the frequency and % cover of negative indicator species. Record in period end April-mid July. <i>Carduus nutans</i> , <i>Chamerion angustifolium</i> , <i>Cirsium arvense</i> , <i>Cirsium vulgare</i> , <i>Plantago major</i> , <i>Urtica dioica</i> .	No species/taxa more than occasional throughout the sward or singly or together more than 5% cover	Invasive species chosen to indicate problems of eutrophication and disturbance from various sources when outside target eg poaching, stock feeding.
		*Sward composition: negative indicator species	Record the frequency and % cover of all tree and scrub species excluding <i>Juniperus communis</i> , considered together, in period end April-mid July. NB If scrub/tree species are more than occasional throughout the sward but less than 5% cover, they are soon likely to become a problem if grazing levels are not sufficient or if scrub control is not being carried out.	No more than 5% cover.	Invasive species outside target shows that habitat is not being managed sufficiently eg under-grazed.
		*Sward composition: negative indicator species	Record % cover of coarse grasses eg <i>Holcus lanatus</i> , <i>Dactylis glomerata</i> , in period end April-mid July.	No more than 10% cover	Invasive species chosen to indicate problems of eutrophication and insufficient removal of biomass eg under-grazing
		Sward composition: negative indicator species	Record frequency of <i>Senecio jacobaea</i> , in period end April-mid July.	No more than occasional throughout the sward	Frequency outside target indicates management problems eg over-grazing and trampling.

		Sward structure: average height	Record sward height in period end April-mid July.	Sward 5 cms or less	Outside target indicates insufficient grazing.
		Sward structure: litter	Record cover of litter where in a more or less continuous layer, distributed either in patches or in one larger area, in period end April-mid July.	Total extent no more than 25% of the sward	Outside target indicates biomass removal is insufficient eg under-grazed.
		Sward structure: bare ground	Record extent of bare ground (not rock) distributed through the sward, visible without disturbing the vegetation, in period end April-mid July.	No more than 15% .	Outside target indicates management problems eg over-grazing.
		Sward structure: localized bare ground	Record extent of localized bare ground around rabbit warrens.	No more than 0.25 ha ie approximately 50x50 metres	Heavy rabbit grazing usually associated with type but outside target indicates rabbit grazing and disturbance levels are too high.
	CG7c	*Extent	Total area (ha), mapped in relation to a site-specific reference level to be determined, in period end April-August.	No reduction in area and any consequent fragmentation without prior consent	Recoverable reduction = unfavourable; non-recoverable reduction = partially destroyed.
		*Sward composition: lichen cover	Record % cover of bushy or plate-like lichens, which may encrust the soil surface, rocks, pebbles or acrocarpous (unbranched) bryophytes.	15-90%	Outside target indicates principal component of interest deteriorating eg from trampling damage, competition from vascular plants or bryophytes, or possibly the effects of atmospheric deposition.
		*Sward composition: presence of rare and scarce lichen species	Record identity and extent (abundance) of rare and scarce lichen species (specific to site).	Continued presence of rare and scarce species and no decline in extent (abundance)	Rare and scarce lichens are important contributors to the interest feature. Decline may be due to a number of factors including atmospheric deposition and insufficient grazing.
		*Sward composition: negative indicator species	Record the frequency and % cover of negative indicator species. Record in period end April-August. <i>Carduus nutans, Chamerion angustifolium, Cirsium arvense, Cirsium vulgare, Plantago major, Pteridium aquilinum, Urtica dioica, coarse grasses eg Holcus lanatus.</i>	No species/taxa more than occasional throughout the sward or singly or together more than 5% cover	Invasive species chosen to indicate problems of eutrophication and disturbance from various sources when outside target eg poaching, stock feeding.
		*Sward composition: negative indicator species	Record the frequency and % cover of all tree and scrub species, considered together, in period end April-August. NB If scrub/tree species are more than occasional throughout the sward but less than 1% cover, they are soon likely to become a problem if grazing levels are not sufficient or if scrub control is not being carried out.	No more than 1% cover.	Invasive species outside target shows that habitat is not being managed sufficiently eg under-grazed.
		*Sward composition: negative indicator species	Record % cover of mat-like, branching (pleurocarpous) bryophytes.	No more than 50% cover	Outside target indicates competition from robust pleurocarpous bryophytes is a problem eg because of under-grazing or eutrophication.
		Sward	Record frequency of <i>Senecio jacobaea</i> , in period	No more than occasional	Frequency outside target indicates management

		composition: negative indicator species	end April-August.	throughout the sward	problems eg over-grazing and trampling.
		Sward structure: average height	Record sward height in period end April-August.	Sward 5 cms or less	Outside target indicates insufficient grazing.
		Sward structure: litter	Record cover of litter where in a more or less continuous layer, distributed either in patches or in one larger area, in period end April-August.	Total extent no more than 5% of the sward	Outside target indicates biomass removal is insufficient eg under-grazed.
		*Sward structure: bare ground	Record extent of bare ground distributed through the sward, visible without disturbing the vegetation. Includes flints, pebbles and tiny tufts of acrocarpous (unbranched) bryophytes. Measure in period end April-August.	10-50%	Inside target indicates open conditions required by lichens are available.
		Sward structure: rabbit grazing levels	Record frequency of rabbit droppings.	Rabbit droppings frequent throughout the sward.	Heavy rabbit grazing usually strongly associated with the habitat, creating conditions suitable for lichens.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
All habitats; heathland, acid grassland, chalk grassland and/or inland dune communities	Annex 1 populations of European importance: stone-curlew, nightjar, woodlark	Extent and distribution of habitat	Area, measured periodically (frequency to be determined)	No significant decrease from reference level.	Methodology for assessing target to be determined. Reference level to be determined.
	Annex 1 populations of European importance: stone-curlew, nightjar, woodlark	Disturbance	Reduction or displacement of birds, measured periodically (frequency to be determined)	No significant reduction or displacement of birds attributable to human disturbance in relation to reference level.	Methodology for assessing target to be determined. Reference level to be determined.
	Annex 1 population of European importance: stone-curlew	Food availability -	Abundance of soil and dung invertebrates, measured periodically (frequency to be determined)	Presence and abundance of prey species should not deviate significantly from reference level	Including e.g. beetles, grasshoppers, flies, earthworms, snails, slugs. Methodology for assessing target to be determined. Reference level to be determined.
	Annex 1 population of European importance: nightjar	Food availability	Abundance of night-flying insects, measured periodically (frequency to be determined).	Presence and abundance of prey species should not deviate significantly from reference level.	Moths and beetles are important for nightjar. Methodology for assessing target to be determined. Reference level to be determined.
	Annex 1 population of European importance: woodlark	Food availability	Abundance of ground-surface invertebrates, measured periodically (frequency to be determined).	Presence and abundance of prey species should not deviate from reference level.	Including e.g. spiders, weevils, caterpillars. Methodology for assessing target to be determined. Reference level to be determined.
	Annex 1 population of European importance: stone-curlew	Vegetation characteristics	Extent and proportions of patches of at least half-hectare with vegetation less than 2cm high and at least 10% bare ground and unrestricted views over 200m, patches of medium height vegetation for roosting, measured periodically (frequency to be determined).	No significant decrease in extent and proportions of patches of at least half-hectare with vegetation less than 2cm high and at least 10% bare ground and unrestricted views over 200m, patches of medium height vegetation for roosting, measured periodically; from reference level.	Methodology for assessing target to be determined. Reference level to be determined.
Weeting Heath SSSI	Annex 1 population of European importance: nightjar	Vegetation characteristics	open ground with low vegetation (feeding), and sparse woodland / scrub cover (feeding, roosting).	No significant decrease in extent and proportions of open ground with predominantly low vegetation (feeding), and sparse woodland / scrub cover (feeding, roosting) from reference level.	Nightjar require vegetation mostly 20-60cm high with less than 50% tree/scrub cover overall. Reference level to be determined.



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pSPA: Breckland
cSAC: Breckland
Component SSSI: Weather and Horn Heaths, Eriswell

Conservation objective for the European Interest on the SSSI

The conservation objectives for the European interests on the SSSI are :

to maintain*, in favourable condition, the:

- European dry heaths

to maintain*, in favourable condition, the habitats for the populations of the Annex 1 bird species⁺, of European importance, with particular reference to:

- heathland
- acid grassland
- chalk grassland and/or inland dune communities

⁺ Woodlark, Nightjar, Stone Curlew

* maintenance implies restoration if the feature is not currently in favourable condition.

The Conservation Objectives for Breckland proposed Special Protection Area and Breckland candidate Special Area of Conservation are, in accordance with para C 10 of PPG 9, the reasons for which the pSPA was proposed and the SAC designated .

The Breckland cSAC and the Breckland pSPA include land within:

Barnhamcross Common SSSI	Gooderstone Warren SSSI
Berner's Heath, Icklingham SSSI	Grime's Graves SSSI
Bridgham and Brettenham Heaths SSSI	Lakenheath Warren SSSI
Cavenham - Icklingham Heaths SSSI	Stanford Training Area SSSI
Cranwich Camp SSSI	Thetford Golf Course and Marsh SSSI
Deadman's Grave, Icklingham SSSI	Thetford Heath SSSI
East Wretham Heath SSSI	Wangford Warren and Carr SSSI
Field Barn Heaths, Hilborough SSSI	Weather and Horn Heaths SSSI
Foxhole Heath, Eriswell SSSI	Weeting Heath SSSI

The Breckland cSAC also includes land within:

Maidencross Hill SSSI	RAF Lakenheath SSSI
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The Breckland pSPA also includes land within

Barnham Heath SSSI	Little Heath, Barnham SSSI
Beeches Pit, West Stow SSSI	Old Bodney Camp SSSI
Cranberry Rough, Hockham SSSI	Rex Graham Reserve SSSI
Eriswell Low Warren SSSI	Warren Hill SSSI
High Lodge, Mildenhall SSSI	West Stow Heath SSSI
How Hill Track SSSI	

The Favourable Condition Table will be used by English Nature and other relevant authorities to determine if a site is in favourable condition. Favourable condition is achieved when the targets given below are met.

The favourable condition table should inform the scope and nature of any 'appropriate assessment' under the Habitats Regulations, but an appropriate assessment will also require consideration of issues specific to the individual plan or project. The favourable condition table does not by itself provide a comprehensive basis on which to assess plans and projects as required under Regulations 20-21, 24, 48-50 and 54 - 85. The scope and content of an appropriate assessment will depend upon the location, size and significance of the proposed project. English Nature will advise on a case by case basis.

Following an appropriate assessment, competent authorities are required to ascertain the effect on the integrity of the site. The integrity of the site is defined in para C10 of PPG9 as the coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified. The determination of favourable condition is separate from the judgement of effect upon integrity. For example, there may be a time-lag between a plan or project being initiated and a consequent adverse effect upon integrity becoming manifest in the condition assessment. In such cases, a plan or project may have an adverse effect upon integrity even though the site remains in favourable condition.

Annual counts for qualifying bird species will be used by English Nature, in the context of five year peak means, together with available information on UK population and distribution trends, to assess whether the SPA is continuing to make an appropriate contribution to the Favourable Conservation Status of the species across Europe.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Dry heathland	H1	Extent	Total area (approx. 100ha) as mapped by Gibbons & Brenchley (1996). Measure every two years if it is possible. [In specific cases see if there is a radical difference between cSAC and SSSI baseline, in which case discuss with specialist.]	Maintain existing area and extent	This community is confined to base-poor and oligotrophic sand soils in the more continental lowlands of Eastern England. Large areas have been lost or fragmented to agriculture and forestry in the past.
		Bare ground	'Natural' bare ground (mineral soil) in intimate mosaic within vegetation 'Recreation' heavily used paralleling paths	'Natural' between 10-25% 'Heavily disturbed' <1%	Bryophytes and lichens are more extensive and diverse among open covers of <i>Calluna</i> . [Sandy profiles can be found in coastal and few inland dune systems, where there is, or has been, mobile sand.]
		Vegetation Structure	Record percentage of cover of <i>Calluna vulgaris</i> in different stages of its life cycle.	Cover of <i>Calluna vulgaris</i> to be between 25% minimum and 90% maximum. Mosaic with >10% young and 30-50% mature / degenerate <i>Calluna vulgaris</i> within unit. < 25% <i>Ulex europaeus</i>	<i>Calluna vulgaris</i> is often the only woody species present. Its cover and height are very variable. Grasses, when they occur, are present as scattered tussocks. <i>Ulex europaeus</i> is uncommon and restricted to disturbed areas.
		Vegetation Composition	Record frequency of any of the following species when present: List A <i>Calluna vulgaris</i> List B <i>Agrostis capillaris</i> , <i>Festuca ovina</i> , <i>Deschampsia flexuosa</i>	All species from List A must be at least frequent. At least two species of list B are at least occasional	Associated flora is for the most part confined to areas between <i>Calluna</i> clumps and the centre of collapsed bushes.
		Negative indicators	Record frequency and percentage cover of any of the following species when present: <i>Pteridium aquilinum</i> <i>Rhododendron ponticum</i> <i>Rubus</i> spp.	< 50 % cover degenerate/dead <i>Calluna vulgaris</i> No <i>Rhododendron ponticum</i> < 1 % <i>Rubus</i> spp., <i>Senecio</i> spp., <i>Urtica dioica</i> , <i>Cirsium</i> spp.	<i>Rhododendron ponticum</i> and <i>Gaultheria shallon</i> can spread rapidly and have a negligible nature conservation value. Dense rhododendron casts deep shade which excludes other vegetation

			<i>Senecio</i> spp. <i>Urtica dioica</i> <i>Pinus</i> spp. <i>Betula</i> spp. <i>Quercus</i> spp. <i>Cirsium arvense</i> <i>Cirsium vulgare</i> <i>Deschampsia flexuosa</i>	< 5% trees, tree seedlings or other species of scrub. < 25% <i>Pteridium aquilinum</i> < 25% <i>Deschampsia flexuosa</i>	Scrub (shrubs, trees or tree seedlings) above 1 m in height is important component of the heathland but its cover should be stable or not increasing as a whole. Management of bracken should be directed more to control than eradication.
			Record presence of signs of overgrazing, e.g. carpet, topiary or drumstick heather forms	No presence of signs of overgrazing.	Although lowland heathlands tend to be more under-grazed than overgrazed, localized overgrazing may occur. Management may need to be modified to tackle these situations.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
All habitats;	Annex 1	Extent and	Area, measured periodically (frequency	No significant decrease from reference	Methodology for assessing target

heathland, acid grassland, chalk grassland and/or inland dune communities	populations of European importance: stone-curlew, nightjar, woodlark	distribution of habitat	to be determined)	level.	be determined. Reference level be determined.
	Annex 1 populations of European importance: stone-curlew, nightjar, woodlark	Disturbance	Reduction or displacement of birds, measured periodically (frequency to be determined)	No significant reduction or displacement of birds attributable to human disturbance in relation to reference level.	Methodology for assessing target be determined. Reference level be determined.
	Annex 1 population of European importance: stone-curlew	Food availability -	Abundance of soil and dung invertebrates, measured periodically (frequency to be determined)	Presence and abundance of prey species should not deviate significantly from reference level	Including e.g. beetles, grasshoppers, flies, earthworms, snails, slugs. Methodology for assessing target be determined. Reference level be determined.
	Annex 1 population of European importance: nightjar	Food availability	Abundance of night-flying insects, measured periodically (frequency to be determined).	Presence and abundance of prey species should not deviate significantly from reference level.	Moths and beetles are important nightjar. Methodology for assessing target be determined. Reference level be determined.
	Annex 1 population of	Food availability	Abundance of ground-surface invertebrates, measured periodically	Presence and abundance of prey species should not deviate from reference level.	Including e.g. spiders, weevils, caterpillars.

	European importance: woodlark		(frequency to be determined).		Methodology for assessing target to be determined. Reference level to be determined.
	Annex 1 population of European importance: stone-curlew	Vegetation characteristics	Extent and proportions of patches of at least half-hectare with vegetation less than 2cm high and at least 10% bare ground and unrestricted views over 200m, patches of medium height vegetation for roosting, measured periodically (frequency to be determined).	No significant decrease in extent and proportions of patches of at least half-hectare with vegetation less than 2cm high and at least 10% bare ground and unrestricted views over 200m, patches of medium height vegetation for roosting, measured periodically; from reference level.	Methodology for assessing target to be determined. Reference level to be determined.
	Annex 1 population of European importance: nightjar	Vegetation characteristics	open ground with low vegetation (feeding), and sparse woodland / scrub cover (feeding, roosting).	No significant decrease in extent and proportions of open ground with predominantly low vegetation (feeding), and sparse woodland / scrub cover (feeding, roosting) from reference level.	Nightjar require vegetation mostly 20-60cm high with less than 50% tree/scrub cover overall. Reference level to be determined.
	Annex 1 population of European importance: woodlark	Vegetation characteristics	Extent and proportions of mix of shrub / tree cover (display), short-medium vegetation and bare ground (feeding, roosting, nesting), measured periodically (frequency to be determined).	No significant decrease in extent and proportions of mix of shrub / tree cover (display), short-medium vegetation and bare ground (feeding, roosting, nesting).	Frequent bare patches under 0.5m high within mosaic of short (under 5cm high) to medium (10-20cm high) ground vegetation, and small clumps of shrubs or trees. Methodology for assessing target to be determined. Reference level to be determined.



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pSPA: Breckland
cSAC: Breckland
Component SSSI: Wangford Warren and Carr

Conservation objective for the European Interest on the SSSI

The conservation objectives for the European interests on the SSSI are :

to maintain*, in favourable condition, the:

- Inland dunes with open *Corynephorus* and *Agrostis* grasslands

to maintain*, in favourable condition, the habitats for the populations of the Annex 1 bird species⁺, of European importance, with particular reference to:

- heathland
- acid grassland
- chalk grassland and/or inland dune communities

⁺ Woodlark, Nightjar, Stone Curlew

* maintenance implies restoration if the feature is not currently in favourable condition.

The Conservation Objectives for Breckland proposed Special Protection Area and Breckland candidate Special Area of Conservation are, in accordance with para C 10 of PPG 9, the reasons for which the pSPA was proposed and the SAC designated .

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East Wretham Heath SSSI	Wangford Warren and Carr SSSI
Field Barn Heaths, Hilborough SSSI	Weather and Horn Heaths SSSI
Foxhole Heath, Eriswell SSSI	Weeting Heath SSSI

The Breckland cSAC also includes land within:

Maidencross Hill SSSI	RAF Lakenheath SSSI
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The Breckland pSPA also includes land within

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The Favourable Condition Table will be used by English Nature and other relevant authorities to determine if a site is in favourable condition. Favourable condition is achieved when the targets given below are met.

The favourable condition table should inform the scope and nature of any 'appropriate assessment' under the Habitats Regulations, but an appropriate assessment will also require consideration of issues specific to the individual plan or project. The favourable condition table does not by itself provide a comprehensive basis on which to assess plans and projects as required under Regulations 20-21, 24, 48-50 and 54 - 85. The scope and content of an appropriate assessment will depend upon the location, size and significance of the proposed project. English Nature will advise on a case by case basis.

Following an appropriate assessment, competent authorities are required to ascertain the effect on the integrity of the site. The integrity of the site is defined in para C10 of PPG9 as the coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified. The determination of favourable condition is separate from the judgement of effect upon integrity. For example, there may be a time-lag between a plan or project being initiated and a consequent adverse effect upon integrity becoming manifest in the condition assessment. In such cases, a plan or project may have an adverse effect upon integrity even though the site remains in favourable condition.

Annual counts for qualifying bird species will be used by English Nature, in the context of five year peak means, together with available information on UK population and distribution trends, to assess whether the SPA is continuing to make an appropriate contribution to the Favourable Conservation Status of the species across Europe.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Open grassland with grey hair-grass and common bent grass of inland dunes	Fixed dunes with herbaceous vegetation	* Extent	Total area (approx. 7ha), mapped in period end April to mid-July.	No reduction in area and any consequent fragmentation without prior consent.	Extent must take account of natural variation of the habitat as a result of succession to and interaction with other Breckland habitats. Judgements in changes to extent/area will have to take particular care to distinguish changes as a result of natural functions vs. anthropogenic actions because of the complex nature of this habitat.
		*Sward composition: positive indicator species	Record the frequency of positive indicator species in period end April-mid July. <i>Aira spp., Aphanes spp., Astragalus danicus, Carex arenaria, Centaurium erythraea, Cladonia spp., Dianthus deltoides, Erigeron acer, Erodium cicutarium, Fragaria vesca, Galium verum, Helianthemum nummularium, Leontodon hispidus/L. Saxatilis, Lotus corniculatus, Ornithopus perpusillus, Pilosella officinarum (Hieracium pilosella), Plantago coronopus, Rumex acetosella, Sedum acre, Teesdalia nudicaulis, Thymus spp.</i>	At least two species/taxa frequent and four species occasional throughout the sward	Choice of species related to NVC type and restriction to unimproved grassland, considered satisfactory when inside target. Among possible species that could be used, choice further restricted by ease of identification, visibility in recording period. Chosen species include those of both the SD11 and V1 communities.
		*Sward composition: positive indicator species	Record the frequency of <i>Corynephorus canescens</i> in the period May - mid July	<i>Corynephorus canescens</i> at least frequent throughout the sward within the part of the dune system most suitable for this species.	
		*Sward composition: negative indicator species	Record the frequency and % cover of negative indicator species. Record in period end April-mid July. <i>Carduus nutans, Chamerion angustifolium, Cirsium arvense, Cirsium vulgare, Plantago major, Urtica dioica, Pteridium aquilinum and Deschampsia flexuosa.</i>	No species/taxa more than occasional throughout the sward or singly or together more than 5% cover.	Invasive species chosen to indicate problems of eutrophication and disturbance from various sources when outside target eg poaching, stock feeding.
		Sward composition: negative indicator species	Record the frequency and % cover of all tree and scrub species considered together. NB If scrub/tree species are more than occasional throughout the sward but less than 5% cover,	No increase in area (mapped in relation to baseline). No more than 5% cover.	Invasive species outside target shows that habitat not being managed sufficiently e.g. under-grazed.

			they are soon likely to become a problem if grazing levels are not sufficient or is scrub control is not being carried out.		
		*Sward composition: negative indicator species	Record % cover of coarse grasses e.g. <i>Holcus lanatus</i> , <i>Dactylis glomerata</i> , in period end April-mid July, measured annually if possible.	No more than 10% cover	Invasive species chosen to indicate problems of eutrophication and insufficient removal of biomass e.g. under-grazing.
		*Sward composition: negative indicator species	Record frequency of <i>Senecio jacobaea</i> , in period end April-mid July, measured annually if possible.	No more than occasional throughout the sward	Frequency outside target indicates management problems e.g. over-grazing and trampling.
		Sward structure: average height	Record sward height in period end April-mid July.	Sward 5 cms or less	Outside target indicates insufficient grazing or mobility of sand.
		Sward structure: litter	Record cover of litter where in more or less continuous layer, distributed either in patches or in one larger area.	Total extent no more than 25% of the sward	Outside target indicates biomass removal is insufficient.
		*Sward structure: bare ground (sand on dunes)	Record extent of bare sand on south-facing slopes of dunes in period end April-mid July.	At least 5% of area.	Outside target indicates management problems e.g. stabilisation of sand
		*Sward structure: bare ground (sand supply to dunes)	Record extent of bare sand on flat land available to blow onto dunes	Bare sand on flat land to be over 1 ha and up to 5ha.	Regular windblown sand maintains the early state succession necessary to maintain <i>Corynephorus canescens</i> in this situation.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
All habitats; heathland, acid grassland, chalk grassland and/or inland dune communities	Annex 1 populations of European importance: stone-curlew, nightjar, woodlark	Extent and distribution of habitat	Area, measured periodically (frequency to be determined)	No significant decrease from reference level.	Methodology for assessing target to be determined. Reference level to be determined.
	Annex 1	Disturbance	Reduction or displacement of birds, measured	No significant reduction	Methodology for assessing target to be determined

	populations of European importance: stone-curlew, nightjar, woodlark		periodically (frequency to be determined)	or displacement of birds attributable to human disturbance in relation to reference level.	Reference level to be determined.
	Annex 1 population of European importance: stone-curlew	Food availability -	Abundance of soil and dung invertebrates, measured periodically (frequency to be determined)	Presence and abundance of prey species should not deviate significantly from reference level	Including e.g. beetles, grasshoppers, flies, earthworms, snails, slugs. Methodology for assessing target to be determined Reference level to be determined.
	Annex 1 population of European importance: nightjar	Food availability	Abundance of night-flying insects, measured periodically (frequency to be determined).	Presence and abundance of prey species should not deviate significantly from reference level.	Moths and beetles are important for nightjar. Methodology for assessing target to be determined Reference level to be determined.
	Annex 1 population of European importance: woodlark	Food availability	Abundance of ground-surface invertebrates, measured periodically (frequency to be determined).	Presence and abundance of prey species should not deviate from reference level.	Including e.g. spiders, weevils, caterpillars. Methodology for assessing target to be determined Reference level to be determined.
	Annex 1 population of European importance: stone-curlew	Vegetation characteristics	Extent and proportions of patches of at least half-hectare with vegetation less than 2cm high and at least 10% bare ground and unrestricted views over 200m, patches of medium height vegetation for roosting, measured periodically (frequency to be determined).	No significant decrease in extent and proportions of patches of at least half-hectare with vegetation less than 2cm high and at least 10% bare ground and unrestricted views over 200m, patches of medium height vegetation for roosting, measured periodically; from reference level.	Methodology for assessing target to be determined Reference level to be determined.
	Annex 1 population of European importance: nightjar	Vegetation characteristics	open ground with low vegetation (feeding), and sparse woodland / scrub cover (feeding, roosting).	No significant decrease in extent and proportions of open ground with predominantly low vegetation (feeding), and sparse woodland / scrub cover (feeding, roosting) from reference	Nightjar require vegetation mostly 20-60cm high with less than 50% tree/scrub cover overall. Reference level to be determined.

				level.	
	Annex 1 population of European importance: woodlark	Vegetation characteristics	Extent and proportions of mix of shrub / tree cover (display), short-medium vegetation and bare ground (feeding, roosting, nesting), measured periodically (frequency to be determined).	No significant decrease in extent and proportions of mix of shrub / tree cover (display), short-medium vegetation and bare ground (feeding, roosting, nesting).	Frequent bare patches under 0.5 ha within mosaic short (under 5cm high) to medium (10-20cm high) ground vegetation, and small clumps of shrubs or trees. Methodology for assessing target to be determined Reference level to be determined.

SLR/NS



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cSAC: Minsmere to Walberswick Heath and Marshes

Component SSSI: Minsmere to Walberswick Heath and Marshes

Conservation objective for the European Interest on the SSSI

The conservation objectives for the European interests on the SSSI are:

subject to natural change, to maintain*, in favourable condition, the:

- ☞ annual vegetation of drift lines
- ☞ perennial vegetation of stony banks

to maintain*, in favourable condition, the:

- ☞ european dry heaths

to maintain*, in favourable condition, the habitats for the populations of Annex 1 species of European importance with particular reference to:

- ☞ Shingle
- ☞ Swamp, marginal and inundation communities
- ☞ Saltmarsh
- ☞ Standing water
- ☞ Grassland
- ☞ Heathland

+ Avocet, Bittern, Little tern, Marsh harrier, Nightjar, Woodlark, Hen harrier

to maintain*, in favourable condition, the habitats for the populations of migratory bird species⁺ of European importance, with particular reference to:

- ☞ Grassland, marsh and standing water

+ Gadwall, Teal, Shoveler, European White-fronted goose

* maintenance implies restoration if the feature is not currently in favourable condition.

The Conservation Objectives for Minsmere to Walberswick Heaths and Marshes candidate Special Area of Conservation and Minsmere to Walberswick Heaths and Marshes Special Protection Area are, in accordance with para C 10 of PPG 9, the reasons for which the cSAC was designated and the SPA was classified. The entry of 25 August 1998 on the Register of European Sites gives the reasons for which the SPA was classified.

The Draft Conservation Objectives for the Minsmere to Walberswick European marine site were published by English Nature on 18 September 2000

Favourable Condition Table for Minsmere to Walberswick Heaths and Marshes SSSI

The Favourable Condition Table will be used by English Nature and other relevant authorities to determine if a site is in favourable condition. Favourable condition is achieved when the targets given below are met.

The favourable condition table should inform the scope and nature of any 'appropriate assessment' under the Habitats Regulations, but an appropriate assessment will also require consideration of issues specific to the individual plan or project. The favourable condition table does not by itself provide a comprehensive basis on which to assess plans and projects as required under Regulations 20-21, 24, 48-50 and 54 - 85. The scope and content of an appropriate assessment will depend upon the location, size and significance of the proposed project. English Nature will advise on a case by case basis.

Following an appropriate assessment, competent authorities are required to ascertain the effect on the integrity of the site. The integrity of the site is defined in para C10 of PPG9 as the coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified. The determination of favourable condition is separate from the judgement of effect upon integrity. For example, there may be a time-lag between a plan or project being initiated and a consequent adverse effect upon integrity becoming manifest in the condition assessment. In such cases, a plan or project may have an adverse effect upon integrity even though the site remains in favourable condition.

Annual counts for qualifying bird species will be used by English Nature, in the context of five year peak means, together with available information on UK population and distribution trends, to assess whether the SPA is continuing to make an appropriate contribution to the Favourable Conservation Status of the species across Europe.

Feature	Sub Feature	Attribute	Measure	Target	Comments
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<p>Vegetated Shingle</p>	<p>Annual vegetation of drift lines AND Perennial vegetation of stony banks</p>	<p>Coastal processes</p>	<p>Number and location of coastal defence operations within sediment cell influencing coastal processes. Measured once per reporting cycle. Information on coast processes should be available from Shoreline Management Plans (SMPs)</p>	<p>No increase in number, extent and location of coastal defence operations which will disrupt sediment supply to and within the site through natural coastal processes to allow a balance of accretion and erosion. A net balanced sediment budget should prevail, subject to natural variation.</p>	<p>Sediment supply to sites from external longshore drift form a significant element of natural sediment recycling within sites. If coastal processes are operating effectively, there will be a balance of erosion and accretion which will help to maintain the Annual vegetation of drift lines/ Perennial vegetation of stony banks interest feature. Information on coastal defence operations should be available from SMPs</p>
<p>Vegetated Shingle</p>	<p>Annual vegetation of drift lines and perennial vegetation of stony banks</p>	<p>Extent</p>	<p>Length (m) and area (ha) of annual vegetation of drift lines and perennial vegetation of stony banks, measured once per reporting cycle in late summer(July/September)</p>	<p>No decrease in linear extent or area from baseline (to be established during first reporting cycle). Extent must take account of natural variation of this habitat as a result of dynamic coastal processes. Indicative target-10% of vegetation maintained seasonally over structure that could support it.</p>	<p><u>Annual vegetation of drift lines</u> This attribute is dependent on there being sufficient shingle available to maintain the form of the shingle bank in its short and long-term development. Judgements in changes to extent/area will have take particular care to distinguish changes as a result of natural functions from those caused by anthropogenic actions because of the highly variable nature of this habitat. The 10% is an initial estimate which h may be modified in the light of monitoring. <u>Perennial vegetation of stony banks</u> This attribute is dependent on there being adequate area to support the whole range of vegetation communities which have been previously recorded on the site. Extent of the shingle feature will influence vegetation succession.</p>

Vegetated shingle	Annual vegetation of drift lines and perennial vegetation of stony banks	Mobility	Percentage of linear extent and area of substrate suitable for colonisation by annual vegetation of drift lines not immediately constrained by introduced structures or landforms, measured once per reporting cycle.	No increase in linear extent or area constrained by introduced structures or landforms.	<p>An important aspect of this habitat is its ability to modify its distribution in response to natural dynamic coastal processes:</p> <p><u>Annual vegetation of drift lines</u> Introduction of physical constraints would reduce the extent of this community and affect the overall structure of the driftline communities.</p> <p><u>Perennial Vegetation of Stony Banks</u> Introduction of physical constraints would reduce the extent of this community and affect the vegetation pattern. On more established stable parts of shingle structures, mobility is a less significant attribute.</p>
Vegetated shingle	Annual Vegetation of drift lines and perennial vegetation of stony banks.	Substrate	Presence of sand/shingle in combination with surface or buried organic material	<p><u>Annual Vegetation of drift lines</u> Maintain substrate with sufficiently low levels of human-induced disturbance to allow driftline vegetation to complete its vegetation cycle. As an indicative target, driftline organic materials should be present along at least 10% of area surveyed, with artificial (non-organic) debris not at levels restricting or suppressing vegetation establishment and growth. Targets appropriate to site will need to be established during first reporting cycle.</p> <p><u>Perennial vegetation of stony banks</u> Presence of shingle/sand in combination with surface or buried organic material</p>	<p><u>Annual Vegetation of drift lines</u> The combination of inorganic and organic substrate is an important precursor to development of annual vegetation of drift lines. Substrate supply should be regulated by natural coastal processes. Driftline organic materials (tidal-derived seaweed, driftwood etc.) on the surface of and in combination with the shingle matrix are important sources of nutrients and anchoring points essential for vegetation development and survival and may play a part in maintaining a seed bank.</p> <p><u>Perennial vegetation of stony banks</u> The combination of inorganic and organic substrate, derived from natural processes, is an important factor in allowing the establishment and development of this type of vegetation. The presence of a fine matrix influences the water balance of the surface layers and is important for plant colonisation.</p>

Vegetated shingle	Annual vegetation of drift lines	Characteristic species of annual vegetation of drift lines	Presence of characterising species, particularly <i>Cakile maritima</i> , <i>Lathyrus japonicus</i> , <i>Crambe maritima</i> , and including <i>Beta vulgaris</i> ssp <i>maritima</i> , <i>Glaucum flavum</i> and <i>Atriplex</i> spp. Assessments will need to be made during late summer (July/August), at least once every reporting cycle.	Maintain the presence and broad distribution of stands of <i>Cakile maritima</i> (sea rocket) and <i>Lathyrus japonicus</i> (sea pea), <i>Crambe maritima</i> (Sea Kale) <i>Glaucum flavum</i> (Yellow horned poppy) and other local variants of drift line vegetation across the feature, allowing for natural variation. As these communities can be very variable, baselines will need to be established during first reporting cycle but should not be lower than 10% of the area that could be colonised.	These communities are found in a narrow strip at the extreme high water mark. Changes in the frequency and abundance of these species should be expected to occur seasonally as a result of natural disturbance by storm events, but the communities are sensitive to disturbance by human activities. Some Annual vegetation of drift lines on coarse substrates does not fit well into the SD 2 classification but is nevertheless an important part of the regional variation. Primarily annuals but perennials may occur in more stable areas.
	Perennial vegetation of stony banks	Characteristic species of Perennial vegetation of stony banks	Presence of vegetation communities characteristic of perennial vegetation of stony banks.	Maintain range of specialist vegetation and its zonation previously recorded on the site, taking account of natural variation. One or more of the characterising species should be at least frequent for each of the communities present on the site.	Individual sites will exhibit different patterns and range of vegetation types depending on site size, history, substrate and patterns of human use. Previous surveys should be used to establish the range for each site. Some sites are present as part of a succession following previous disturbance.
Vegetated shingle	Perennial vegetation of stony banks	Lack of disturbance	Proportion of substrate not showing evidence of human disturbance. This can include evidence of path network proliferation, especially from access points/car parks/throughway; detached clumps of vegetation and broken surface layers; disturbance of bare shingle; loss of sorting and relief of ridge system.	Maintain substrate with sufficiently low levels of human-induced disturbance to allow perennial vegetation to establish and undergo succession	Most sites are likely to have experienced some degree of past disturbance. If this has stopped, recovery of vegetation may be possible, but very slow, if the fine matrix can reestablish. If disturbance is continuous, recovery is unlikely to occur. Infrequent moderate disturbance may, in certain circumstances, initiate successional phases and can lead to the development of modified grassland communities

		Vegetation negative indicators	Presence of negative indicator species including non-native species, invasive species indicative of changes in nutrient status and species not characteristic of typical communities	No further increase in species not typically associated with the communities that define the feature . Local targets will need to be defined. and cross-reference to negative indicators for grassland features.	Changes in the extent and cover of invasive species usually indicate a change in conditions on a site, often as a result of anthropogenic activities which may promote rapid expansion or increase in cover. These are often initiated by changes in management. Such species may include those identified as negative indicators for grasslands <i>e.g. Cirsium arvense, Senecio jacobaea, Urtica dioica</i> , together with non-native species and scrub/trees. These will vary from site to site and locally-significant species will need to be defined
Vegetated shingle	Perennial vegetation of stony banks	Vegetation patterning	Presence of vegetation patterns related to geomorphological structure (ridges and lows).	No reduction in extent of vegetation cover exhibiting relationship to geomorphological structure, taking account of natural variation	Vegetation patterns can be related to the physical characteristics of the substrate. Patterns of ridges and lows in particular reflect the variations in particle size which in turn affect water-holding capacity.
		Hydrological conditions	Impact of changes to hydrological conditions on extent and composition of wetland vegetation communities where they have been previously recorded. Wetland communities may not be present on all sites.	Maintain hydrological conditions that will sustain specialist freshwater wetland vegetation communities, subject to natural variation	The water table can be adversely affected by water abstraction, whilst disturbance of the surface layers can affect the water-holding capacity of the surface layers (see substrate attribute). If wetland communities, where present, exhibit signs of reduction in freshwater supply, (long-term replacement of wetland species by scrub or dry grassland species or species of brackish conditions), that cannot be attributed to natural variation, further detailed studies of hydrological conditions may be needed. Where water abstraction is already occurring, there should be monitoring programmes that can supply more information.

Operational feature	Criteria feature	Attribute	Measure	Target	Comments
Heathland	H1 dry heathland	Extent	Total area (ha) mapped in relation to baseline (ie first available map of interest feature when/after notified). Measure every two years if possible.	Maintain existing area on its current sites	This community is confined to base-poor and oligotrophic sandy soils in the more continental lowlands of Eastern England. Large areas have been lost or fragmented to agriculture and forestry in the past.

Heathland	H1 dry heathland	Bare ground	<p>'Natural' bare ground (mineral soil) in intimate mosaic within vegetation</p> <p>'Recreation' heavily used paralleling paths</p>	<p>'Natural' between 10-25%</p> <p>'Heavily disturbed' <1%</p>	<p>Bryophytes and lichens are more extensive and diverse among open covers of <i>Calluna</i>.</p> <p>Sandy profiles can be found in coastal and few inland dune systems, where there is, or has been, mobile sand.</p>
		Vegetation Structure	<p>Record percentage of cover of <i>Calluna vulgaris</i> in different stages of its life cycle.</p>	<p>Cover of <i>Calluna vulgaris</i> to be between 25% minimum and 90% maximum.</p> <p>Mosaic with >10% young and 30-50% mature / degenerate <i>Calluna vulgaris</i> within unit.</p> <p>< 25% <i>Ulex europaeus</i></p>	<p><i>Calluna vulgaris</i> is often the only woody species present. Its cover and height are very variable.</p> <p>Grasses, when they occur, are present as scattered tussocks.</p> <p><i>Ulex europaeus</i> is uncommon and restricted to disturbed areas.</p>

		Vegetation Composition	Record frequency of any of the following species when present: List A <i>Calluna vulgaris</i> List B <i>Agrostis capillaris</i> , <i>Festuca ovina</i> , <i>Deschampsia flexuosa</i>	All species from List A must be at least frequent. At least two species of list B are at least occasional	Associated flora is for the most part confined to areas between <i>Calluna</i> clumps and the centre of collapsing bushes.
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Heathland	H1 dry heathland	Negative indicators	Record frequency and percentage cover of any of the following species when present: <i>Pteridium aquilinum</i> <i>Rhododendron ponticum</i> <i>Rubus spp.</i> <i>Senecio spp.</i> <i>Urtica dioica</i> <i>Pinus spp.</i> <i>Betula spp.</i> <i>Quercus spp.</i>	< 50 % cover degenerate/dead <i>Calluna vulgaris</i> No <i>Rhododendron ponticum</i> < 1 % <i>Rubus spp.</i> , <i>Senecio spp.</i> , <i>Urtica dioica</i> , creeping or spear thistle < 5% scrub, trees or tree seedlings. < 25% <i>Pteridium aquilinum</i>	<i>Rhododendron ponticum</i> can spread rapidly and have a negligible nature conservation value. Dense rhododendron casts deep shade which excludes other vegetation. Scrub (shrubs, trees or tree seedlings) above 1 m in height is an important component of the heathland but its cover should be stable or not increasing as a whole. Management of bracken should be directed more to control than eradication.
	H8, dry heathlands	Extent	Total area (ha) mapped in relation to baseline (ie first available map of interest feature when/after notified)	Maintain existing area on its current sites	H8 occurs on free-draining, acid to circumneutral soils in the warm oceanic regions of lowland England.

		Bare ground	<p>'Natural' bare ground (mineral soil) in intimate mosaic within vegetation</p> <p>'Heavily disturbed' stock poached, eroded or heavily used paralleling paths</p>	<p>'Natural' between 10-25% in intimate mosaic with vegetation</p> <p>'Disturbed' <1%</p>	<p>H8 appears in free draining soils.</p> <p>Typically high cover sub-shrub canopy, sometimes excluding all but very sparse herbaceous species.</p>
		Vegetation Structure	Record cover of heather in different stages of its life cycle.	<p>Cover of <i>Calluna vulgaris</i> to be between 25% minimum and 90% maximum.</p> <p>Mosaic with >10% young and 30-50% mature / degenerate <i>Calluna vulgaris</i> within unit.</p>	<p>Grazing and burning affect the structure and composition of shrub and grass components.</p> <p>In coastal stands, exposure to wind limits sub-shrub growth.</p>
Heathland	H8, dry heathlands	Vegetation Composition	<p>Record frequency of any of the following species when present:</p> <p>List A <i>Ulex gallii</i>, <i>Calluna vulgaris</i> and <i>Erica cinerea</i> List B <i>Potentilla erecta</i>, <i>Festuca ovina</i>, <i>Scilla verna</i>, <i>Hypochoeris radicata</i> and <i>Vaccinium myrtillus</i>, <i>Agrostis capillaris</i>, <i>Ulex europaeus</i>.</p>	<p>All species from List A must be at least frequent.</p> <p>At least one species of list B is at least occasional</p>	<p>Burning opens the ground for <i>Ulex gallii</i>.</p> <p><i>Ulex europaeus</i> appears in disturbed areas.</p>

		Negative indicators	Record percentage cover of any of the following species when present: <i>Rubus</i> spp. <i>Pinus</i> spp. <i>Betula</i> spp. <i>Pteridium aquilinum</i>	< 50 % cover degenerate/dead <i>Calluna vulgaris</i> < 5% tree or tree seedlings. < 25% <i>Pteridium aquilinum</i>	Invasion of shrubs and trees is hindered by exposure to wind and salt-spray.
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Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
All Habitats	Annex 1/Migratory species	Disturbance	Reduction or displacement of birds, measured periodically (frequency to be determined).	No significant reduction in numbers or displacement of breeding/wintering birds attributable to human disturbance, from a reference level, subject to natural change.	Excessive disturbance can result in reduced food intake and/or increased energy expenditure. The breeding success of terns is particularly vulnerable to disturbance and predation. Productivity (number of successfully fledged young) can be used to monitor disturbance. Methodology for assessing target to be determined. Reference level to be determined.
All Habitats	Annex 1/Migratory species	Extent and distribution of habitat	Area (ha), measured once per reporting cycle.	No decrease from reference level, subject to natural change.	For all habitats, for all qualifying species. Methodology for assessing target to be determined. Reference level to be determined.

All habitats	Marsh harrier, Hen harrier and Bittern	Food availability	Abundance of small-medium sized mammals and birds, fish and amphibians, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of food species year round from a reference level.	Small-medium sized mammals (voles, mice rabbits) and birds (pipits to ducks) are important prey in the breeding season for marsh harriers. Fish and amphibians are important prey year round for Bittern, including rudd, roach (6-35cm), frogs and toads. Reference level to be determined. Methodology to be determined.
Shingle	Little tern	Vegetation cover characteristics.	Predominantly open ground with sparse vegetation and bare surfaces (colonial nesting), measured periodically (frequency to be determined).	Vegetation should not deviate significantly throughout the areas used for nesting, from reference level, subject to natural change.	Nesting Little terns require <10% vegetation cover and the remainder bare shingle, during the breeding season. Unrestricted views over a minimum of 200m are important, during the breeding season, for early detection of predators. Methodology to be determined
	Little tern	Food availability	Presence and abundance of crustaceans, small fish and worms, measured periodically (frequency to be determined).	Presence and abundance of prey species should not deviate significantly from an established baseline, subject to natural change.	Crustaceans, annelids, sandeels, sprats, and cupeidae are an important food source for Little terns. Reference level to be determined. Methodology to be determined.
Swamp, marginal and inundation	Marsh harrier and Bittern	Landscape	Large, unbroken expanse of emergent vegetation (nesting, feeding, cover), measured periodically (frequency to be determined).	No significant reduction in expanse of emergent vegetation, year round.	Bittern and Marsh Harrier require continuous reed over >20ha. Methodology to be determined.

Swamp, marginal and inundation	Marsh harrier and Bittern	Vegetation characteristics	Pure reed stands with vigorous growth over whole area (nesting, concealment), measured periodically (frequency to be determined).	No significant reduction in extent of vigorous growth over the pure reed stand, maintained through cutting regime.	<p>Bittern and Marsh harrier require at least 30% reedbed uncut, and remainder not more than 6 years old with not more than 20% cut in any one year. Trees fewer than 20/ha during the breeding period.</p> <p>Methodology to be determined.</p>
Swamp, marginal and inundation	Bittern	Salinity	Salinity, measured periodically (frequency to be determined).	No significant change in wetland salinity during the breeding season.	<p>Salinity of wetlands should not be greater than 5 % during the breeding season.</p> <p>Freshwater wetlands are important feeding grounds during breeding season.</p> <p>Methodology to be determined.</p>
Standing water	Bittern	Landform	Ditches predominantly with shallow margins and not too deep (feeding), measured periodically, (frequency to be determined).	No significant reduction in ditches with shallow margins.	<p>Most ditches up to 2.5m deep, consisting of deep central channel (>1.5m) and 1m deep/5m wide shallow margin on at least one side.</p> <p>Year round</p> <p>Methodology to be determined.</p>
Standing water	Bittern and Marsh harrier	Water Depth	Shallow water within reeds, plus deep pools and dykes (feeding), measured periodically (frequency to be determined).	Water depth and extent of shallows within reeds should not deviate significantly from reference level, with no significant reduction in the presence of deep pools and channels year round.	<p>Bittern and Marsh harrier require water depth throughout reedbed of 10-30cm, and Bittern also require pools of pools 2-4m deep.</p> <p>Channels for bittern should be up to 2.5m deep, consisting of a deep central channel (>1.5m) and 1m deep/5m wide shallow margin on at least one side.</p> <p>Bittern year round, Marsh Harrier breeding season. This applies to bittern and marsh harrier breeding areas only.</p> <p>Methodology to be determined</p>

Standing water	Bittern	Water area	Large, open areas of water (feeding), measured periodically (frequency to be determined).	No significant reduction in the area of open water for feeding, year round.	Bittern require one or more freshwater pools of >0.5 ha, open water not exceeding 20 % of the reedbed area present during summer months. Breeding season. Reedbed edge is an important feeding area for bitterns. This is mostly provided by dyke edges at this site. Methodology to be determined.
Saltmarsh	Avocet	Vegetation characteristic	Open, short vegetation or bare ground predominating in areas used for roosting, measured periodically (frequency to be determined).	No significant reduction in extent of short vegetation or bare ground throughout areas used for feeding and roosting, subject to natural change.	Vegetation height < 10cm is required throughout areas used for roosting by avocets. Methodology to be determined.
Saltmarsh	Avocet	Landscape	Open areas, relatively free of obstructions (for feeding, anti-predator, roosting), measured periodically (frequency to be determined).	No significant reduction in view lines in feeding and roosting areas, subject to natural change.	At roost sites, Avocets require areas with unrestricted views over >200m. Methodology to be determined.
Saltmarsh	Avocet	Landform	Shallow-sloping ground adjacent to water (colonial nesting), measured periodically (frequency to be determined).	No significant reduction in sloping ground adjacent to water, from reference level, subject to natural change.	At nesting areas during the breeding season (summer), avocets require sloping land, grading to <30cm above water level, including islands, spits or platforms. This applies only to avocet nesting areas. Reference level to be determined. Methodology to be determined.

Low islands and spits	Avocet	Landform	Many low islands, spits or artificial platforms with shallow gradients, surrounded by/adjacent to standing water, measured periodically (frequency to be determined).	No significant reduction in low islands and spits, from reference level, subject to natural change.	Low islands/spits, surrounded by/adjacent to standing water, grading to <3cm above water level, or platforms locally frequent, during the breeding period. Reference level to be determined. Methodology to be determined.
Saltmarsh, grassland and marsh	Avocet	Vegetation characteristics	Frequent patches of sparsely vegetated or bare ground (nesting), measured periodically (frequency to be determined).	No significant reduction from reference level, subject to natural change.	Vegetation cover usually <10%, or 30-40% where many predators. Breeding (summer) season. Methodology for assessing target to be determined.
Standing water	Avocet	Food availability	Abundance of marine or freshwater insects, crustaceans, molluscs, fish or worms, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of food species year round, from reference level, subject to natural change.	Average biomass to be established during first reporting cycle, including e.g. Gammarus, Corophium, flies, beetles, Neries, Hydrobia, Cardium, gobies. Year-round. Reference level to be determined. Methodology to be determined.
Standing water	Avocet	Hydrology/flow	Stable water levels (nesting), measured periodically (frequency to be determined).	Water levels should not deviate significantly, from reference level, during the breeding season.	<15cm fluctuation is required during the breeding (summer) season. Applies only to avocet nesting areas. Methodology to be determined.
Standing water	Avocet	Water depth	Extensive shallow water (feeding), measured periodically (frequency to be determined).	Water depth should not deviate significantly from reference level, during the breeding season.	3-5cm water depth over >50% of water area, during breeding (summer) season. Applies only to avocet nesting areas. Methodology to be determined.

Standing water	Avocet	Salinity	Wetlands that are not too salty (feeding), measured periodically (frequency to be determined).	No significant change in wetland salinity during the breeding season.	Salinity of wetlands should not be greater than 25 % during the breeding (summer) season. Applies only to avocet nesting areas. Methodology to be determined.
Grassland and marsh	Gadwall, Shoveler and Teal	Vegetation characteristics	Frequent patches of medium to tall vegetation, close to open water (nesting), measured periodically (frequency to be determined).	No significant reduction in vegetation characteristics, from reference level, throughout the area used for nesting.	Several patches of vegetation of 20-60cm, <50m from open water, within areas used for nesting. Breeding (summer) season. Gadwall, shoveler and teal nesting areas only. Methodology to be determined.
Grassland and marsh	Gadwall, Shoveler and Teal	Absence of obstruction to view lines	Open terrain, relatively free of obstructions (feeding, anti-predator, roosting), measured periodically (frequency to be determined).	No significant reduction in view lines in feeding and roosting areas during the winter season.	Reference level to be determined. Methodology to be determined.
Standing water	Gadwall, Shoveler and Teal	Food availability	Abundance of water-surface invertebrates (feeding by young) measured periodically, (frequency to be determined).	No significant reduction in presence and abundance of prey species during breeding season.	Average biomass to be defined during first reporting cycle, including e.g. hatching midges. Breeding (summer) season. Reference level to be determined. Methodology to be determined.
Standing water	Gadwall, Shoveler and Teal	Hydrology/flow	Fluctuating water levels, measured periodically (frequency to be determined).	Dropping water levels providing a succession of surface water areas for feeding.	Water levels falling by 5-15% per month, from the time of mean hatch date Breeding (summer) season. Gadwall, shoveler and teal nesting areas only. Methodology for assessing target to be determined.

Standing water	Gadwall, Shoveler and Teal	Water depth	Extensive shallow water (feeding), measured periodically (frequency to be determined).	No significant reduction in extent of shallow water (feeding).	<25cm over >50% of water area Year-round. Does not apply to avocet nesting areas during breeding season. Methodology for assessing target to be determined.
Standing water	Gadwall and Teal	Food availability	Abundance of soft-leaved and aquatic plants and seed bearing plants, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of food species in relation to reference level.	<u>For Gadwell:</u> >25% cover of one or more target species, e.g. <i>Glyceria fluitans</i> , <i>Agrostis stolonifera</i> and <i>Chara</i> , <i>Potamogeton</i> , <i>Ceratophyllum</i> spp. (Permanent and flood water). <u>For Teal:</u> >25% cover of <i>Polygonum</i> , <i>Eleocharis</i> , <i>Rumex</i> or <i>Ranunculus</i> spp. (standing water). Year-round Methodology for assessing target to be determined.
Grassland-marsh/marshy, Standing water	Shoveler	Food availability	Abundance of aquatic plants, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of food species in relation to reference level.	>25% cover of one or more target species, e.g. <i>Scirpus</i> , <i>Eleocharis</i> , <i>Carex</i> , <i>Potamogeton</i> , <i>Glyceria</i> Year-round Methodology for assessing target to be determined.
Grassland-marsh/marshy, Standing water	Shoveler	Food availability	Abundance of aquatic invertebrates, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of prey species in relation to reference level.	Average biomass to be established during first reporting cycle, including e.g. <i>Hydrobia</i> , crustaceans, caddisflies, diptera, beetles. Year-round Methodology for assessing target to be determined.

Grassland - marsh/marshy	Shoveler	Hydrology/flo w	Wet fields with many surface pools, ditches or channels (feeding), measured periodically (frequency to be determined).	No significant reduction in extent of shallow water.	20-30% of the area soggy or flooded. Breeding (summer) season. Applies to shoveler nesting areas only. Methodology for assessing target to be determined.
Saltmarsh	Teal	Food availability	Abundance of seed-bearing plants, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of food species in relation to reference level, subject to natural change.	>25% cover of one or more target species, e.g. Salicornia, Atriplex Non-breeding season. Methodology for assessing target to be determined.
Standing water	Teal	Food availability	Abundance of aquatic invertebrates, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of prey species in relation to reference level.	Average biomass to be established during first reporting cycle, including e.g. Hydrobia, flies, caddisfly, beetles, bugs Year-round. Reference level to be determined. Methodology to be determined.
Grassland - improved/unimproved	White-fronted goose	Landscape	Open areas, including large fields (feeding, anti-predator), measured periodically (frequency to be determined).	No significant reduction in open terrain, in relation to reference level.	Areas with unrestricted views over >500m with an effective field size >5ha Both improved and unimproved grassland used by gees at this site. Non-breeding season. Applies to goose feeding areas only. Methodology for assessing target to be determined.

Grassland - improved/unimproved	White-fronted goose	Food availability	Abundance of soft-leaved plants, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of food species in relation to reference level.	<p>>25% cover of one or more target species, e.g. <i>Trifolium repens</i>, <i>Lolium perenne</i>, <i>Poa trivialis</i>, <i>Holcus lanatus</i>.</p> <p>Both improved and unimproved grassland used by geese at this site.</p> <p>Non-breeding season. Applies to goose feeding areas only.</p> <p>Methodology for assessing target to be determined.</p>
Grassland - improved/unimproved	White-fronted goose	Vegetation characteristics	Predominantly short to medium grassland swards (feeding), measured periodically (frequency to be determined).	No significant reduction in extent of short to medium grassland sward, from reference level.	<p>Sward height 10-20cm throughout feeding areas.</p> <p>Both improved and unimproved grassland used by geese at this site. Non-breeding season. Applies to goose feeding areas only.</p> <p>Methodology for assessing target to be determined.</p>
Heathland	Nightjar	Vegetation characteristics	Open ground with predominantly low vegetation (feeding), bare patches (nesting) and sparse woodland/scrub cover (feeding, roosting)	No significant decrease from reference level.	<p>Vegetation height mostly 20-60cm, with frequent bare patches of >2sq.m, 10-20% bare ground and <50% tree/scrub cover overall.</p> <p>Breeding (summer) season.</p> <p>Methodology for assessing target to be determined.</p>

Heathland, grassland and marsh	Nightjar	Food availability	Abundance of night-flying insects, measured periodically (frequency to be determined).	No significant decrease in presence and abundance of prey species from reference level. Average biomass to be established during first reporting cycle, including e.g. moths, beetles	Moths and beetles are important for Nightjar. Nightjar feed over all of these habitats at this site. Breeding (summer) season. Methodology for assessing target to be determined.
Heathland, grassland and marsh	Hen harrier	Food availability	Abundance of live mammals and birds, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of prey species in relation to reference level.	Average biomass to be established during first reporting cycle, including e.g. small-medium sized mammals - voles to rabbit - and birds - pipts to gamebirds. Year-round Methodology for assessing target to be determined.



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cSAC: The Broads
SPA: Broadland
Component SSSI: Upton Broads and Marshes

Conservation objectives for the European Interest on the SSSI

The conservation objectives for the European interest on the SSSI are:

to maintain*, in favourable condition, the:

- Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior*.
- Calcareous fens with *Cladium mariscus* and species of the *Carex davallianae*.
- Alkaline fens
- Natural eutrophic lakes with *Magnopotamion* or *Hydrocharition*-type vegetation.
- Transition mires and quaking bogs.
- Hard oligo-mesotrophic waters with benthic vegetation of *Chara* spp..
- *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*).

to maintain*, in favourable condition, the habitats for the population of:

- Fen orchid (*Liparis loeselii*).
- Desmoulin's whorl snail (*Vertigo moulinsiana*).
- Otter (*Lutra lutra*).

to maintain*, in favourable condition, the habitats for the populations of Annex1 bird species⁺ of European importance with particular reference to:

- open water
- swamp
- reedbed
- fen

- lowland wet grassland with ditches.

+ Bittern, Marsh harrier, Hen harrier, Bewick's swan, Whooper swan and Ruff.

to maintain*, in favourable condition, the habitats for the populations of migratory bird species⁺ of European importance with particular reference to:

- open water
- swamp
- fen
- reedbed
- lowland wet grassland with ditches.

+Gadwall and Shoveler.

to maintain*, in favourable condition, the habitats of the populations of waterfowl that contribute to the wintering waterfowl assemblage of European importance, with particular reference to:

- open water
- swamp and fen
- lowland wet grassland with ditches and water bodies.

* maintenance implies restoration if the feature is not currently in favourable condition.

The Conservation Objectives for The Broads candidate Special Area of Conservation and Broadland Special Protection Area are, in accordance with para C 10 of PPG 9, the reasons for which the cSAC was designated and the SPA classified. The entry of 30 January 1996 on the Register of European Sites gives the reasons for which the SPA was classified.

The **Broads cSAC** and **Broadland SPA** includes land within: Alderfen Broad SSSI, Ant Broads and Marshes SSSI, Barnby Broad and Marshes SSSI, Broad Fen, Dilham SSSI, Bure Broads and Marshes SSSI, Burgh Common and Muckfleet Marshes SSSI, Calthorpe Broad SSSI, Cantley Marshes SSSI, Crostwick Marsh SSSI, Decoy Carr, Acle SSSI, Ducan's Marsh, Claxton SSSI, Geldeston Meadows SSSI, Hall Farm Fen, Hemsby SSSI, Halvergate Marshes SSSI, Hardley Flood SSSI, Limpenhoe Meadows SSSI, Ludham-Potter Heigham Marshes SSSI, Poplar Farm Meadows, Langley SSSI, Priors Meadows, Hickling SSSI, Shallam Dyke Marshes, Thurne SSSI, Smallburgh Fen SSSI, Sprat's Water and Marshes, Carlton Colville SSSI, Stanley and Alder Carrs, Aldeby SSSI, Upper Thurne Broads and Marshes SSSI, Upton Broads and Marshes SSSI and Yare Broads and Marshes SSSI.

The **Broads cSAC** additionally includes land within: Damgate Marshes, Acle SSSI and Trinity Broads SSSI.

Favourable Condition Table for Upton Broad & Marshes SSSI

The Favourable Condition Table will be used by English Nature and other relevant authorities to determine if a site is in favourable condition. Favourable condition is achieved when the targets given below are met.

The favourable condition table should inform the scope and nature of any ‘appropriate assessment’ under the Habitats Regulations, but an appropriate assessment will also require consideration of issues specific to the individual plan or project. The favourable condition table does not by itself provide a comprehensive basis on which to assess plans and projects as required under Regulations 20-21, 24, 48-50 and 54 - 85. The scope and content of an appropriate assessment will depend upon the location, size and significance of the proposed project. English Nature will advise on a case by case basis.

Following an appropriate assessment, competent authorities are required to ascertain the effect on the integrity of the site. The integrity of the site is defined in para C10 of PPG9 as the coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified. The determination of favourable condition is separate from the judgement of effect upon integrity. For example, there may be a time-lag between a plan or project being initiated and a consequent adverse effect upon integrity becoming manifest in the condition assessment. In such cases, a plan or project may have an adverse effect upon integrity even though the site remains in favourable condition.

Annual counts for qualifying bird species will be used by English Nature, in the context of five year peak means, together with available information on UK population and distribution trends, to assess whether the SPA is continuing to make an appropriate contribution to the Favourable Conservation Status of the species across Europe.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments	
Calcareous fens with <i>Cladium mariscus</i> and species of the <i>Caricion davallianae</i> Floodplain/valley mire (E33)	NVC type S2 S24 S25	Extent	Area (ha), measured periodically.	Maintain type and extent of NVC communities which are optimal for the interest feature. No significant decrease from reference level.	Map extent and position of main NVC communities, monitor every 5 years. Reference level to be determined.	
		Sward composition	Frequency of <i>Cladium mariscus</i>	Maintain extent and abundance of <i>Cladium mariscus</i> .	Monitor <i>Cladium</i> every 5 years. Reference level to be determined.	
			Floristic quality of <i>Cladium mariscus</i> swamp (S2), <i>Phragmites australis</i> - <i>Peucedanum palustre</i> fen (S24) and <i>Phragmites australis</i> - <i>Eupatorium cannabinum</i> fen (S25) through the abundance of 'typical' species	Within the area occupied by target communities, the eponymous species and others of constancy V should be frequent.	Monitor every five years.	
			Floristic quality of small sedge component of the vegetation	Maintain extent and abundance of small sedge component.	Monitor small sedge component every 5 years. Reference level to be determined	
			Frequency or cover of tree / scrub spp.	No more than 5% cover, if in discrete stands, or no more than occasional throughout the sward		
			Sward structure	Extent of bare mud or peat visible without disturbing vegetation	No more than 5% of mire area	
				Frequency of hoof prints	No more than occasional over the mire as a whole	

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		Water quality	Base rich, low fertility supply to vegetation	Maintain groundwater and other base rich-low nutrient water sources to the vegetation	These communities can be adversely affected by nutrient enrichment. In floodplain situations river water quality is critically important.
				Establish target base and NPK concentration and monitor annually.	It is important that irrigating waters are free from excessive plant nutrients. Reference level to be determined
		Water quantity	Hydrological regime.	Maintain appropriate hydrological regime to support recognised vegetation types.	Better understanding of the functioning of sites is required, including the importance of groundwater and piezometric head Install dipwells in a network or transect and measure at least bimonthly.
				Reference level to be determined	
Water table	Level of water table for the S2 community	Within range -15 to +40cm, with standing water between tussocks	Install dipwells in a network or transect and measure at least bimonthly.		
Rare species.	Maintain or enhance populations of special or rare plant (and animal) species.	Species to be determined.	Identify special species and seek guidance in defining measures. Reference levels to be determined.		

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Alkaline fens.	M13 black bog rush - blunt flowered rush <i>Schoenus nigricans</i> - <i>Juncus subnodulosus</i> fen.	Extent	Area (ha), measured periodically.	Maintain type and extent of NVC communities which are optimal for the interest feature. No significant decrease from reference level.	Map extent and position of main NVC communities, monitor every 5 years. Reference level to be determined.
Spring and seepage-fed chalk-rich alkaline valley fen		Water quantity and quality	High piezometric head and permanently high water table (allowing for natural seasonal fluctuations) The spring water has low fertility and is very rich in base ions.	Summer water levels at fen surface throughout the year. No reduction in the extent of influence of seepage or spring head. No standing water. Maintain surface drainage to prevent buildup of surface waters.	Reduction in piezometric head could affect both water table and extent of the vegetation. Standing water is considered a negative indicator. Set up dipwells and record at least monthly during the summer.
		Water quality	Base rich, low fertility supply to vegetation	Maintain groundwater and other base rich-low nutrient water sources to the vegetation. No increase in surface and river waters inputs into M13 vegetation.	These communities can be adversely affected by nutrient enrichment. Surface and river water quality are critically important.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
				Establish target base and NPK concentration and monitor annually.	It is important that irrigating waters are free from excessive plant nutrients. Carry out water analysis for basic ions and for NPK every 5 years. Reference level to be determined
		Vegetation structure	Presence of varied sward structure with full range of vegetation heights, from close cropped to tall. Includes varying degrees of tussock height. Always includes elements of short pioneer fen vegetation	At height of summer (July August), fen vegetation to be typically no more than 0.5 metres tall, with random mosaic of differing vegetation and tussock heights across whole fen area.	If vegetation is managed by mowing, damage to tussock structure must be avoided.
		Vegetation composition	Floristic quality of <i>Schoenus nigricans</i> - <i>Juncus subnodulosus</i> mire (M13) through the abundance of 'typical' species	Within the area occupied by target communities, the eponymous species and others of constancy V or IV should be abundant.	Monitor every five years.
			Combined cover of <i>Carex</i> spp., <i>Eriophorum</i> spp., <i>Juncus subnodulosus</i> , <i>Schoenus nigricans</i> , brown / pleurocarpus mosses and positive indicators listed below	At least 75%	
			Frequency of brown / pleurocarpus mosses (DAFOR scale)	At least frequent throughout the flush	

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
			Frequency of positive indicators (DAFOR scale): <i>Anagallis tenella</i> , <i>Caltha palustris</i> , <i>Centaurea nigra</i> , <i>Dactylorhiza</i> spp., <i>Epipactis palustris</i> , <i>Filipendula ulmaria</i> , <i>Galium uliginosum</i> , <i>Hydrocotyle vulgaris</i> , <i>Lotus uliginosus</i> , <i>Lychnis flos-cuculi</i> , <i>Lythrum salicaria</i> , <i>Mentha aquatica</i> , <i>Parnassia palustris</i> , <i>Pedicularis</i> spp., <i>Pinguicula vulgaris</i> , <i>Succisa pratensis</i> , <i>Valeriana dioica</i> , <i>Vicia cracca</i>	At least three species frequent and three species occasional throughout. No species forming dominant stands over more than 20% of the flush	
			Frequency of negative indicators using DAFOR scale: <i>Deschampsia cespitosa</i> , <i>Holcus lanatus</i> , <i>Juncus acutiflorus</i> , <i>J. effusus</i>	No more than two species frequent throughout the sward, no species abundant	
			Frequency of negative indicators using DAFOR scale: <i>Cirsium arvense</i> , <i>Cirsium vulgare</i> , <i>Urtica dioica</i>	No more than rare	

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
			Frequency or cover of tree / scrub spp.	No more than 5% cover or more than occasional throughout the sward	
		Sward structure	Extent of bare mud / peat visible without disturbing vegetation	No more than 15%	Exclude stones, gravel and tufa
			Frequency of <i>Molinia caerulea</i> tussocks	No more than occasional	
			Cover of litter in a more or less continuous layer	Total extent no more than 10% of the mire area	Litter may be distributed in patches or in one larger area
			Average vegetation height	In range 15 - 50cm	
			Frequency of hoof prints	No more than occasional over the mire as a whole	
		Rare species	Maintain or enhance populations of special or rare plant (and animal) species	Species to be determined.	Identify special species and seek guidance in defining measures. Reference levels to be determined.
Molinia meadows on calcareous, peaty or clayey-silt-laden soils (<i>Molinia caeruleae</i>)	NVC type M24	Extent	Total area (ha), mapped in relation to a site-specific reference level to be determined, in period early June - end of August.	No reduction in area and any consequent fragmentation without prior consent	Recoverable reduction = unfavourable; non-recoverable reduction = partially destroyed. Temporary reductions related to natural variation in hydrological conditions should be noted as such where information allows.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Unimproved marshy grassland		Sward composition: positive indicator species	Record the frequency of positive indicator species from the list below to give an overall total of 2 frequent and 3 occasional. Record in period early June - end of August. <i>Anagallis tenella</i> , <i>Angelica sylvestris</i> , <i>Cirsium dissectum</i> , <i>Erica tetralix</i> , <i>Eupatorium cannabinum</i> , <i>Filipendula ulmaria</i> , <i>Galium uliginosum</i> / <i>Galium palustre</i> , Orchidaceae spp., <i>Pedicularis sylvatica</i> , <i>Potentilla erecta</i> , small blue-green <i>Carex</i> spp. (leaves less than 5mm wide) (<i>C. flacca</i> , <i>C. nigra</i> , <i>C. panicea</i>), <i>Sphagnum</i> spp., <i>Succisa pratensis</i> , <i>Valeriana dioica</i> , <i>Valeriana officinalis</i> , <i>Viola palustris</i> .	Overall total of at least two species/taxa frequent plus at least three species/taxa occasional throughout the sward.	Choice of species related to NVC types, restriction to unimproved grassland and wetness characteristics of habitat, all satisfactory when inside target. Among possible species that could be used, choice further restricted by ease of identification, visibility in recording period.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		Sward composition: frequency and cover of <i>Molinia caerulea</i>	Record the frequency and % cover of <i>Molinia caerulea</i> . Record in period early June - end of August.	At least frequent throughout the sward but no more than 80% cover	<i>Molinia</i> is a characteristic component of the community and should thus be at least frequent. However, increasing cover exceeding upper target is indicative of insufficient management by grazing or cutting.
		Sward composition: negative indicator species	Record the frequency and % cover of negative indicator species. Record in period early June- end of August. <i>Cirsium arvense</i> , <i>Cirsium vulgare</i> , <i>Rumex crispus</i> , <i>Rumex obtusifolius</i> , <i>Urtica dioica</i> .	No species more than occasional throughout the sward or singly or together more than 5% cover	Invasive species chosen to indicate problems of eutrophication and disturbance from various sources when outside target eg poaching, stock feeding.
		Sward composition: cover of <i>Juncus</i> spp	Record the % cover of <i>Juncus</i> species from groups A and B. Record in period early June - end of August. Group A: jointed rushes (<i>Juncus acutiflorus</i> , <i>J. articulatus</i> , <i>J. subnodulosus</i>) Group B: <i>Juncus conglomeratus</i> , <i>J. effusus</i> and <i>J. inflexus</i> .	All species combined no more than 80% cover, of which no more than 50% made up of spp. from Group B	<i>Juncus</i> spp can be characteristic components of the communities. However, increasing cover is indicative of insufficient management by grazing or cutting and/or waterlogging. Group B species may indicate problems of eutrophication from various sources when outside target eg stock feeding, fertiliser use.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		*Sward composition: negative indicator species.	Record the % cover of negative indicator species. Record in period early June - end of August. <i>Cirsium palustre.</i>	No more than 20% cover.	This species may be indicative of disturbance from various sources when outside target eg poaching, stock feeding.
		*Sward composition: negative indicator species.	Record the % cover of negative indicator species. Record in period early June - end of August. <i>Deschampsia cespitosa</i>	No more than 10% cover.	Increasing cover of <i>Deschampsia cespitosa</i> outside target may be indicative of insufficient management by grazing or cutting, overgrazing, disturbance by excessive poaching or altered hydrology eg reduced water movement in the soil profile during the year resulting in anaerobic conditions. Increasing cover may lead to reduced species richness in the community.
		*Sward composition: negative indicator species	Record the % cover or frequency of negative indicator species in period early June - end of August. All tree and scrub species excluding <i>Salix repens</i> and <i>Myrica gale</i> , considered together. NB If scrub/tree species in pastures are more than occasional throughout the sward but less than 5% cover, they are soon likely to become a problem if grazing levels are not sufficient or if scrub control is not being carried out.	No more than 5% cover.	Invasive species outside target shows that habitat is not being managed sufficiently eg lack of or insufficient grazing/cutting

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		*Sward composition: % cover of <i>Phragmites australis</i>	Record the % cover of <i>Phragmites australis</i> in period early June-end of August.	No more than 10% cover.	Increasing cover of <i>Phragmites australis</i> outside target may be indicative of insufficient management by grazing or cutting. Lack of management may ultimately convert the community to tall-fen in some geographical areas.
		Sward composition: % cover of <i>Myrica gale</i> .	Record the % cover of <i>Myrica gale</i> in period early June - end of August.	No more than 10% cover	If <i>Myrica</i> cover outside target this shows that habitat is not being managed sufficiently eg lack of or insufficient grazing/cutting
		Sward composition: negative indicator species.	Record the frequency and % cover of negative indicator species. Record in period early June - end of August. <i>Senecio aquaticus</i>	No more than occasional throughout the sward or more than 5% cover	Outside target can discourage hay/grazing management because the species is toxic to livestock, and is palatable when dry.
		Sward structure: average height	Record sward height in period early June - end of August. (Upper target refers to pastures only.)	M24a Sward 5 cm or greater (excluding <i>Juncus</i> spp.) but no more than 25% over 60 cm M24b Sward 2 cm or greater (excluding <i>Juncus</i> spp.) but no more than 25% over 15 cm	Sward height above upper target shows that habitat is not being managed sufficiently eg lack of or insufficient grazing or if below lower target, is being overgrazed.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		Sward structure: litter	Record cover of litter where in a more or less continuous layer, distributed either in patches or in one larger area. Record in period early June - end of August for pastures.	Total extent no more than 25% of the sward	Outside target indicates biomass removal is insufficient eg lack of or insufficient grazing or not cut for hay.
		Sward structure: bare ground	Record extent of bare ground distributed through the sward, visible without disturbing the vegetation. Record in period early June - end of August.	No more than 10%	Outside target indicates problems with stock management eg poaching, supplementary feeding.
Transition mires and quaking bogs. Transitional as from open water to solid peat and/or from one trophic status to another. Floodplain/valley mire (E32)	NVC type M9	Extent	Area (ha), measured periodically.	Maintain type and extent of NVC communities which are optimal for the interest feature. No significant decrease from reference level.	Map extent and position of main NVC communities, monitor every 5 years. Reference level to be determined.
		Sward structure	Frequency of hoof prints	No more than occasional over the mire as a whole	
			Extent of bare mud or peat visible without disturbing vegetation	No more than 5% of mire area	

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		Sward composition	Floristic quality of <i>Carex rostrata-Calliergon cuspidatum/giganteum</i> mire (M9) through the abundance of 'typical' species	Within the area occupied by target communities, the eponymous species and others of constancy V and IV should be abundant.	
			Frequency or cover of tree / scrub spp.	No more than 5% cover, if in discrete stands, or no more than occasional throughout the sward	It is acceptable to have component wet woodland communities and so the presence of scattered or weak scrub is not always a negative feature.
		Water quality	Maintenance of trophic status	Maintain the raft characteristics. Exclude surface and drainage water likely to increase fertility.	The balance between seepage and surface water must be maintained, and attention given to any differences of base-richness between competing sources of water.
		Water quantity	Stable groundwater	Water levels which does not fluctuate more than 30cm annually.	Install dipwells and measure at least bimonthly. Control of the range of vertical water level fluctuation may be important to maintain the delicate balance between base-rich and base-poor conditions.
		Physical condition of raft	Degree of movement capable by raft.	Presence of raft that trembles when walked upon.	Check for evidence of trophic change.
		Rare species	Maintain or enhance populations of special or rare plant (and animal) species	Species to be determined.	Identify special species and seek guidance in defining measures. Reference levels to be determined.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i>, <i>Alnion incanae</i>, <i>Salicion alvae</i>)	Parts of NVC types W2 and W5 and 6)	Extent	Extent/location of stands	<p>No loss of ancient semi-natural stands</p> <p>At least current area of recent semi-natural stands maintained, although their location may alter.</p> <p>At least the area of ancient woodland retained</p>	<p>* Stand loss due to natural processes eg in minimum intervention stands may be acceptable.</p> <p>* A high proportion of this type of woodland may be recent and hence a dynamic interchange with open wet communities may occur.</p> <p>* Stand destruction may occur if the understorey and ground flora are irretrievably damaged even if the canopy remains intact.</p> <p>* Loss = 0.5 ha or 0.5% of the stand area, whichever is the smaller.</p> <p>* 20% canopy cover is conventionally taken as the lower limit for an area to be considered as woodland. Stands of willow scrub may pose difficulties of definition.</p> <p>* Area and location of stands may be assessed remotely or by site visit.</p>

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		3.Regeneration potential	Successful establishment of young stems in gaps or on the edge of a stand	<p>* Signs of seedlings growing through to saplings to young trees at sufficient density to maintain canopy density over a 10 yr period (or equivalent regrowth from coppice stumps).</p> <p>* No planting in stands.</p>	<p>* A proportion of gaps at any one time may develop into permanent open space; equally some current permanent open space/glades may in time regenerate to closed canopy.</p> <p>* Regeneration may often occur on the edges of stands rather than in gaps within it.</p> <p>* In coppice most of the regeneration will be as stump regrowth. See JNCC Guidance Note on likely desirable levels of regeneration.</p> <p>* The minimum level of regeneration to be acceptable from a nature conservation viewpoint is likely to be much less than that needed where wood production is also an objective.</p> <p>* Assess this attribute by walking through the wood in spring/summer.</p>

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		4. Composition	Cover of native versus non-native species (all layers) Death, destruction or replacement of native woodland species through effects of non-native fauna or external unnatural factors	<ul style="list-style-type: none"> * At least the current level of site-native species maintained. * At least 90% of cover in any one layer of site-native or acceptable naturalised species. * Death, destruction or replacement of native woodland species through effects of introduced fauna or other external unnatural factors not more than 10% by number or area in a five year period. 	<ul style="list-style-type: none"> * In sites where there might be uncertainty as to what counts as site-native or as an acceptable naturalised species this must be made clear (eg the position of poplar). * Where cover in any one layer is less than 100% then the 90% target applies to the area actually covered by that layer. * Factors leading to the death or replacement of woodland species could include pollution, including eutrophication from adjacent farmland; new diseases (eg alder dieback). * Damage to species by non-native species that does not lead to their death or replacement by non woodland species (eg damage from squirrels to trees that non-the-less survive) is not necessarily unacceptable in nature conservation terms. * Excessive browsing/grazing by even native ungulates may be considered an unnatural external factor where it leads to undesirable shifts in the composition/structure of the stand, although this may be picked up by attributes 2 or 5 anyway. * Assess this attribute by a walk through the site.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		5. Species, habitats, structures characteristic of the site.	Ground flora type	* 80% of ground flora cover referable to relevant NVC wet woodland community (W 2, 5 and 6)	* Changes leading to these targets not being met may be acceptable where this is due to natural processes.
			Distinctive and desirable elements for a given site eg. locally uncommon species such as <i>Carex elata</i> ; veteran trees or rich invertebrate assemblages.	* Distinctive elements maintained at current levels and in current locations (where appropriate).	* Distinctive elements and patches should be marked on maps for ease of checking in the field wherever possible.
			Patches of associated habitats and transitions eg to ash wood, open fen and open water	* Patches and transitions maintained in extent and where appropriate location.	* If there are species groups/assemblages that cannot be assessed directly on a general site visit then surrogate features should be given where possible, eg dead wood concentrations for associated invertebrates.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
22.12/44 Hard oligo-mesotrophic waters with benthic vegetation of <i>Chara</i> formations	Almost exclusively type '4' of the GB Standing Water Classification. Very rarely types '5' and '10'.	Extent of <i>Chara</i> beds.	Check extent of <i>Chara</i> beds in July on an annual basis.	Maintain type and extent of <i>Chara</i> vegetation which is optimal for the interest feature. No significant decrease from reference level. Reference level to be determined.	<p><i>Chara</i> community. <i>Chara</i> formations of various species. Endangered/Vulnerable/Rare species are <i>Chara intermedia</i>, <i>Chara baltica</i>, <i>Chara canescens</i>, <i>Chara rudis</i> and <i>Chara connivens</i>; and nationally scarce species are <i>Chara aspersa</i>, <i>Chara contraria</i>, <i>Chara pedunculata</i> and <i>Chara curta</i>. All are potentially components of a supporting community of <i>Myriophyllum spicatum</i>, <i>Potamogeton</i> species, <i>Callitriche</i> species and <i>Nymphaea alba/Nuphar lutea</i>. Lakes often fringed by <i>Phragmites australis</i>, <i>Typha angustifolia</i> and <i>Schoenoplectus lacustris</i>. Baseline survey should be carried out to determine present extent of <i>Chara</i> beds. Check for deterioration, extent of epiphytic growth on <i>Chara</i>. "Holes" in <i>Chara</i> beds should be monitored. <i>Elodea canadensis</i> should be absent. As <i>Chara</i> species are a colonising aspect of seral progression supporting macrophyte community may have to be managed to prevent seral progression.</p> <p>Extent will be variable according to site and can be variable according to seasonal changes In many cases <i>Chara</i> will be dominant feature.</p>
		Extent of supporting community including emergent vegetation.	<p>Check community of associated macrophytes including, rare species, on an annual basis.</p> <p>Rare species include <i>Najas marina</i>.</p> <p>Maintain <i>Chara</i> and other species diversity.</p>	<p>Stable not expanding or contracting supporting community over 5 year period within limits of $\pm 10\%$ annually.</p>	
Standing water, lakes, turf ponds and ditch systems.					

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		Water quality	Absence of filamentous algae and unicellular algal blooms. Establish Total P range by quarterly measurements over 3 year period, thereafter annually July/August.	For <i>Chara</i> lake 30 $\mu\text{g l}^{-1}$ total phosphorus or below. Eutrophic conditions above 30 $\mu\text{g l}^{-1}$ total phosphorus should not be prevalent.	Filamentous algae should be absent. The range of marl lakes exhibit a continuum of trophic condition from oligotrophy to low eutrophy. So the trophic condition for each marl lake type should be maintained. If filamentous algae present. Check for diffuse or point sources of pollution. Check Total P levels in aquifer if aquifer fed, check also that site not used for black-headed gull roosting or breeding. The target level should be set for individual SAC's and an acceptable range established. Increases in Total P level suggest need to move from annual July/August check back to more intensive quarterly samples to verify whether change is real.
		Sediment	Check condition of sediment and measure overall cover of marl every 10 years.	Marl production desirable, although this may be low or absent in oligotrophic hard waters. Some peat slumping acceptable, provided this is not induced due to land drainage.	Check immediate catchment area for drainage or land use change which might induce high sediment loads to enter system.
		Hydrology	Check water level in July annually.	Maintenance of stable water level desirable, although seasonal fluctuations expected.	Water level change downwards acceptable only in dry years. If lake level lowering due to outside water demands such as aquifer abstraction then counter measures need to be instigated.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
22.13 Natural eutrophic lakes with Magnopotamion or Hydrocharition type vegetation. Standing water-Broads,turf ponds and ditch systems	NVC types: A3 A9 A13 A4 Types '7', '8', '9' and '10' of the GB Standing Water Classification.	Extent of community.	Check extent of beds in July/August every 4 years.	Extensive beds of submerged macrophytes should be present. Maintain mixed community.	Submerged vegetation characterised by broad leaved <i>Potamogeton</i> species such as <i>Potamogeton perfoliatus</i> , <i>P lucens</i> , <i>P crispus</i> , <i>P natans</i> , <i>P x salicilifolius</i> , <i>P coloratus</i> , <i>P polygonifolius</i> , <i>P gramineus</i> , <i>P. alpinus</i> and <i>Hydrocharition</i> type vegetation. <i>Hydrocharis morsus-ranae</i> is a very rare associate with the <i>Magnopotamion</i> in the UK. Its community components are present, however, mainly <i>Spirodela polyrhiza</i> , <i>Lemna minor</i> , <i>Hippuris vulgaris</i> , <i>Utricularia vulgaris</i> and <i>Apium inundatum</i> . Community should be mixed and no one species should be present above 40% level of total amount of macrophyte presence.
		Extent of <i>Potamogeton</i> species <i>Magnopotamion</i> .	Check species presence in July/August every 4 years.	Maintain species presence of all <i>Magnopotamion</i> and fine leaved <i>Potamogetons</i> .	No one <i>Potamogeton</i> species should be present above 40% level of total amount or level of macrophyte presence (see Water Quality comment).
		Extent of nationally scarce or threatened species.	Establish population size and position of nationally scarce, rare or threatened species over a period of 3 years, on a quarterly basis; thereafter every two years in July/August.	Maintain presence of all nationally scarce, rare or threatened plant species.	Nationally scarce, rare or threatened species can vary in population size and extent due to temporal/seasonal changes in climate which affects physical variables such as water temperature.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		Water quality	Arrange for analysis of quarterly measurements of Total P for first three years; thereafter annually in July/August.	Maintain water quality particularly Total P levels. For southern systems 100 $\mu\text{g l}^{-1}$ or below, down to 65 $\mu\text{g l}^{-1}$.	The variable targets for Total P reflects the geographical range of this trophic state. The target for Total P should be set for individual SAC's and an acceptable range established. Increases in Total P suggest a need to move from annual July/August check, back to more intensive quarterly samples to verify whether change is real. Also check for cover shifts of macrophytes and dominant presence of pollution tolerant species above 40% level such as <i>Potamogeton pectinatus</i> , <i>Myriophyllum spicatum</i> and/or <i>Ceratophyllum demersum</i> .
		Water quantity	Check lake levels during July/August.	Maintain hydrology of lake or ditch system.	Hydrology involves not only lake or ditch levels but flushing rates; prevent lowering or raising of lake or ditch level through modification of outfalls. With ditch systems aim for constant high water table throughout the year Water abstraction may represent a significant issue through the reduction of ground water and flushing flows into marginal ditch systems.
		Sediment	Check for excessive growths of individual macrophytes ie above 40%.	Maintain sediment quality and quantity.	Effects of increased macrophyte growth also relates to water quality; if this is at target levels, then enrichment of sediments is an issue if broad leaved <i>Potamogeton</i> species decline and fine leaved <i>Potamogeton pectinatus</i> increases above 40% level or <i>Myriophyllum spicatum</i> / <i>Ceratophyllum demersum</i> become dominant. Introduced fish and recreational use of site might through sediment disturbance move sites out of favourable condition. Check for increases in siltation from catchment use changes or changes in sewage treatment.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Fen	Fen orchid <i>Liparis loeselii</i>	Vegetation	Visual assessment	Requires deep moss carpet with relatively high water levels at or near surface through year.	Negative attribute: Lack of deep moss carpet; deep litter layer.
			Visual assessment	Requires lack of scrub - <10% and scattered	Negative attribute: presence of scrub shading plants
			Visual assessment	Associates: Bryophytes including <i>Campylium protensum</i> , <i>Calliergon giganteum</i> , <i>Scorpidium scopioides</i> , <i>Cinclidium stygium</i> , <i>Carex approporinquate</i> , <i>C. lassiocarpa</i> , <i>Schoenus nigricans</i> associated with 24e and f	
			Visual assessment	Natural succession: Terrestrialisation of fens through hydrosereal succession.	
		Sward height	Visual assessment	Varies and link to plant populations is unknown	
		Water	Visual assessment	Needs surface wetness in summer	Negative attribute: Conductivity over 500uS Abstraction impacts on water levels
		Management	Regime	Mowing on 2-4 year rotation and/or extensive grazing (1 cow/4 ha) during summer depending on fen's productivity.	Trampling at a low level helps to open up the sward
River	Otter <i>Lutra lutra</i>	Water quality	EA scale	"Good", with no pollution incidents	Refer to Environment Agency for data
		Flow rate	Mean annual flow rate	No reduction attributable to increased abstraction.	Data from Environment Agency
		Site integrity	Total area	No reduction of fragmentation of area	
		Fish stocks	EA assessment	Fish stocks appropriate to the nutrient status of the river No significant decline in fish biomass or species diversity	Refer to Environment Agency for sample data

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		Disturbance	Extent of public access to river	No significant change to river or bankside usage; no significant development	
		Bankside cover	Proportion of bank lined with trees, scrub or other thick cover	No overall permanent decrease	Some change acceptable as long as it is appropriately mitigated
		Presence of otters	Signs of otters	Signs of otters found at least once per year	Use data from national or county surveys
Rivers fens	Desmoulins whorl snail <i>Vertigo moulinsiana</i>	structure and composition of marginal vegetation	Length or area of stand of appropriate vegetation	The extent of suitable habitat should be maintained, compared to the extent on a baseline map, over appropriate lengths of river or area of fen or pool margin [length of river or area of fen or swamp, and number of sample stretches to be decided locally]. Suitable vegetation will be dense, unbroken stands of <i>Glyceria maxima</i> , <i>Carex riparia</i> , <i>C. acutiformis</i> , <i>C. paniculata</i> , <i>Cladium mariscus</i> and/or sparse <i>Phragmites</i> and <i>Phalaris arundinacea</i> .	It is expected that traditional and accepted river management will cause local deterioration of some stands but the aim is to ensure that habitat in appropriate condition is present at frequent intervals along a river corridor. The snail appears to be able to colonise new adjacent stands rapidly, and closely spaced, fragmented patches may provide acceptable conditions for this species. Habitat should be a suitable size and linked to rivers and waterways hydrologically and not separated by barriers such as mown paths.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Rivers fens		water table	1. depth below ground level; 2 & 3. vegetation indicators of drying out.	1. Water table must be close to the surface so that the ground remains squelchy all year, i.e. never drying out, so that, even in high summer, water will rise when the soil is trodden. Winter flooding is permissible. 2. Not more than 10% (occasional on the DAFOR scale) replacement of preferred dominant species by dense tall reed or by plants of drier conditions, e.g. <i>Urtica dioica</i> , <i>Epilobium hirsutum</i> , and low grasses invading the litter layer, within pre-selected stands (as selected for	<i>V. mouliinsiana</i> requires highly humid conditions which are met by a high water table below the stands of vegetation in which it lives. Unfavourably wet conditions can result from prolonged flooding in summer or water penning being set too high. Current research (2000-01) will refine acceptable limits and measures for soil moisture. measuring extent). 3. Not more than 10% (occasional on the DAFOR scale) replacement of tall monocotyledons by plants preferring wetter conditions, e.g. <i>Rorippa nasturtium-aquaticum</i> , <i>Apium nodiflorum</i> and <i>Berula erecta</i> .
Rivers fens		vegetation height	height of bulk of the vegetation	Average height of the stands no less than 50 cm.	<i>V. mouliinsiana</i> requires tall leaves on which it lives most of the year. Heavy grazing and mowing may be detrimental if it removes most taller clumps.
Rivers fens		shading by shrubs and trees (e.g. willow, alder)	proportion of habitat	Less than 10% increase in area of shade, compared to extent on the baseline map.	

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
rivers fens		water quality	Biological class - Environment Agency's General Quality Assessment scheme. Assess every 5 years River Ecosystem Class. Assess against Environment Agency monitoring results. Suspended solids	>= 'b' In addition, no drop in class from exiting situation. >= RE3 In addition, no drop in class from exiting situation.	Although the snail lives out of the water, water quality may influence vegetation structure and perhaps the microflora living on the leaf surfaces where the snail feeds, and chemical quality may directly affect the snail when it is submerged during floods. Future experience and research may indicate that these variables are inapplicable to <i>V. moulinsiana</i> . No values are given for suspended solids as this pollutant has no direct influence on the condition of the habitat for moulinsiana. No monitoring targets are set for hardness but assessments for projects must take account of the snail's need for water whose hardness must not fall below value expected for the catchment.
All habitats: Grassland Improved, Swamp, Marginal and Inundation, Standing Water	Annex 1 species of European importance and waterfowl assemblage including migratory species of European and national importance.	Extent of habitat.	Area (ha), measured periodically (frequency to be determined).	No significant decrease from reference level.	For all habitats for all qualifying species. Methodology for assessing target to be determined. Reference level to be determined.
		Disturbance in roosting and feeding areas	Reduction or displacement of birds, measured periodically (frequency to be determined).	No significant displacement of birds attributable to human disturbance in relation to reference level.	All qualifying breeding and wintering annex 1 and migratory species. Methodology for assessing target to be determined. Reference level to be determined.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
All habitats: Grassland Improved, Swamp, Marginal and Inundation, Standing Water	Annex 1 species of European importance.	Food Availability	Abundance of live mammals and birds, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of food species year round in relation to reference level.	Small-medium sized mammals (voles, mice, rabbits) and birds (pipits to ducks) are important prey in the breeding season for marsh harriers and during the winter for hen harriers. Methodology for assessing target to be determined. Reference level to be determined.
Grassland Improved	Annex 1 species of European importance.	Absence of obstruction to viewlines	Open terrain relatively free of obstructions (feeding, anti-predator, roosting), measured periodically (frequency to be determined).	No significant reduction in view-lines in feeding and roosting areas during the winter season.	Bewick's swan and whooper swan prefer unrestricted views over 500 metres. Ruff prefer unrestricted views over 200 metres. Methodology for assessing target to be determined.
Grassland Improved	Annex 1 species of European importance.	Food Availability	Presence and abundance of soil and ground surface invertebrates, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of prey species during the winter season in relation to reference level.	Dipteran flies, beetles and earthworms are important for Ruff. Methodology for assessing target to be determined. Reference level to be determined.
Grassland Improved	Annex 1 species of European importance.	Food availability	Presence and abundance of soft leaved plants, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of food species during the winter season in relation to reference level.	<i>Lolium perenne</i> , <i>Glyceria fluitans</i> , <i>Phleum pratense</i> , <i>Rorippa amphibia</i> , <i>Alopecurus geniculatus</i> for Bewick's swan and whooper swan. Methodology for assessing target to be determined. Reference level to be determined.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Grassland Improved	Annex 1 species of European importance.	Vegetation characteristics	Predominantly short grassland swards (feeding and roosting during the winter period), measured periodically (frequency to be determined).	Vegetation height throughout areas used for feeding and roosting during the winter season should not deviate significantly.	Bewick's swan and whooper swan require a sward height <10 cm within feeding areas during the winter season. Ruff require a vegetation height of <10cm within roostin areas during the winter season. Methodology for assessing target to be determined.
Grassland Improved	Annex 1 species of European importance.	Hydrology/ Flow	Wet fields with surface pools, measured periodically (frequency to be determined).	No significant reduction in soggy or flooded areas during the winter season.	Bewick's swan require 25-50% of the area soggy or flooded. Ruff also prefer permanently wet and flooded areas with a water depth of <3 cm. Methodology for assessing target to be determined.
Swamp, Marginal and Inundation	Annex 1 species of European importance.	Landscape	Large, unbroken expanse of emergent vegetation (nesting, feeding, concealment), measured periodically (frequency to be determined).	No significant reduction in expanse of emergent vegetation year round.	Bittern and Marsh Harrier require continuous reed over >20ha. Methodology for assessing target to be determined.
Swamp, Marginal and Inundation	Annex 1 species of European importance.	Vegetation characteristics	Pure reed stand with vigorous growth over whole area (nesting, concealment), measured periodically (frequency to be determined).	No significant reduction in extent of vigorous growth over the pure reed stand, maintained through cutting regime.	Bittern and marsh harrier require at least 30% of the reedbed uncut and the remainder not more than 6 years old with no more than 20% cut in any year. Methodology for assessing target to be determined.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Swamp, Marginal and inundation	Annex 1 species of European importance.	Water depth	Shallow water on open water margins plus frequent deep pools and channels (feeding), measured periodically (frequency to be determined).	Water depth and extent of shallows within water margins should not deviate significantly with no significant reduction in the presence of deep pools and channels year round.	<p>Bittern and marsh harrier require shallow water margins of 10-30cm, and bittern also require pools 2-4m deep.</p> <p>Channels for bittern should be up to 2.5m deep, consisting of a deep central channel (>1.5m) and 1m deep/5m wide shallow margin on at least one side.</p> <p>Methodology for assessing target to be determined.</p>
Swamp, Marginal and Inundation	Annex 1 species of European importance.	Hydrology flow	Stable Water levels, measured periodically (frequency to be determined).	Water levels should not deviate significantly during the breeding season.	<p><10cm fluctuation is required during the breeding season for Marsh Harrier.</p> <p>Methodology for assessing target to be determined.</p>
Swamp, Marginal and Inundation Standing Water	Annex 1 species of European importance.	Food Availability	Presence and abundance of fish and amphibians, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of prey species year round, in relation to reference level.	<p>Eel, rudd, roach of 6-35cm and frogs/toads are important for Bittern.</p> <p>Methodology for assessing target to be determined. Reference level to be determined.</p>
Standing Water	Migratory species of European and national importance.	Food Availability	Presence and abundance of aquatic plants, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of food species during the winter season in relation to reference level.	<p><i>Glyceria fluitans</i>, <i>Agrostis stolonifera</i>, <i>Chara</i>, <i>Potamogeton</i> and <i>Ceratophyllum spp</i> for gadwall.</p> <p><i>Scirpus</i>, <i>Eleocharis</i>, <i>Carex</i>, <i>Potamogeton</i> and <i>Glyceria</i> for shoveler.</p> <p><i>Chara</i>, <i>Nitella</i> and <i>Potamogeton spp.</i> are important for pochard and tufted duck.</p> <p><i>Chara</i>, <i>Cladophora</i>, <i>Potamogeton</i>, <i>Ruppia</i>, <i>Ranunculus</i> and <i>Elodea</i> are important for Coot.</p> <p>Methodology for assessing target to be determined. Reference level to be determined.</p>

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Standing Water	Nationally important migratory species.	Food Availability	Presence and abundance of seed bearing plants, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of food species during the winter season in relation to reference level.	<i>Polygonum, Eleocharis, Rumex</i> and <i>Ranunculus</i> are important for Teal. Methodology for assessing target to be determined. Reference level to be determined.
Standing Water	Migratory species of European and national importance.	Food availability	Presence and abundance of aquatic invertebrates, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of prey species during the winter season in relation to reference level.	Hydrobia, crustaceans, caddisflies, diptera and beetles are important for shoveler. Hydrobia, flies, caddisfly, beetles and bugs are important for teal. Methodology for assessing target to be determined. Reference level to be determined.
Standing Water	Nationally important migratory species.	Food availability	Presence and abundance of benthic invertebrates, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of prey species during the winter season in relation to reference level.	Chironomid larvae are important for pochard. <i>Dreissena polymorpha</i> , chironomid larvae, <i>Gammarus</i> and <i>Hydrobia</i> are important for tufted duck. Methodology for assessing target to be determined. Reference level to be determined.
Standing Water	Nationally important migratory species.	Food availability	Presence and abundance of surface and benthic invertebrates, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of prey species during the winter season in relation to reference level.	<i>Mytilus</i> , <i>Dreissena polymorpha</i> and caddis-fly larvae are important for coot. Methodology for assessing target to be determined. Reference level to be determined.
Standing Water	Nationally important migratory species.	Food availability	Presence and abundance of fish, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of prey species during the winter season in relation to reference level.	Fish of 10-25 cm are important for cormorant. Fish of 3-21 cm are important for great crested grebe. Methodology for assessing target to be determined. Reference level to be determined.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Standing Water	Migratory species of European and national importance.	Water depth	Areas of shallow medium and deep water (feeding), measured periodically (frequency to be determined).	Water depths should not deviate significantly during the winter season.	<p>Cormorant require a water depth of 2-10m.</p> <p>Great crested grebe require a water depth of 1-3m.</p> <p>Gadwall require a water depth of <25cm. A kleptoparasitic relationship with Coot can allow Gadwall to potentially exploit deeper areas up to 2m in depth.</p> <p>Shoveler and teal require a water depth of <30cm.</p> <p>Coot require a water depth of 0.5-2m.</p> <p>Pochard and tufted duck require a water depth of 2-5m.</p> <p>Methodology for assessing target to be determined.</p>
Standing Water	Annex 1 species of European importance.	Water area	Large open areas of water(feeding), measured periodically (frequency to be determined).	No significant reduction in the area of open water for feeding year round.	<p>Bittern require one or more freshwater pools of >0.5ha not exceeding 20% of reedbed area overall.</p> <p>Methodology for assessing target to be determined.</p>
Standing Water	Migratory species of national importance.	Water area	Large open areas of water(feeding, roosting), measured periodically (frequency to be determined).	No significant reduction in the area of open water for feeding and roosting during the winter season.	<p>Cormorant require one or more fresh waters of >20ha.</p> <p>Pochard require one or more fresh waters of >6ha.</p> <p>Tufted duck require one or more freshwaters of >5ha.</p> <p>Coot require one or more freshwaters of >2ha.</p> <p>Great crested grebe require one or more freshwaters of >1ha.</p> <p>Methodology for assessing target to be determined.</p>



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cSAC: The Broads
SPA: Broadland
Component SSSI: Upper Thurne Broads and Marshes

Conservation objectives for the European Interest on the SSSI

The conservation objectives for the European interest on the SSSI are:

to maintain*, in favourable condition, the:

- Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior*.
- Calcareous fens with *Cladium mariscus* and species of the *Carex davallianae*.
- Natural eutrophic lakes with *Magnopotamion* or *Hydrocharition*-type vegetation.
- Transition mires and quaking bogs.
- Hard oligo-mesotrophic waters with benthic vegetation of *Chara* spp..
- *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*).

to maintain*, in favourable condition, the habitats for the population of:

- Otter (*Lutra lutra*).

to maintain*, in favourable condition, the habitats for the populations of Annex1 bird species⁺ of European importance with particular reference to:

- open water
- swamp
- fen
- reedbed
- lowland wet grassland with ditches and water bodies.

+Bittern, Marsh harrier, Hen harrier, Bewick's swan, Whooper swan and Ruff.

to maintain*, in favourable condition, the habitats for the populations of migratory bird species⁺ of European importance with particular reference to:

- open water
- swamp
- fen
- reedbed
- lowland wet grassland with ditches and water bodies.

+Pink-footed goose, Gadwall and Shoveler.

to maintain*, in favourable condition, the habitats of the populations of waterfowl that contribute to the wintering waterfowl assemblage of European importance, with particular reference to:

- open water
- swamp and fen
- lowland wet grassland with ditches and water bodies.

* maintenance implies restoration if the feature is not currently in favourable condition.

The Conservation Objectives for The Broads candidate Special Area of Conservation and Broadland Special Protection Area are, in accordance with para C 10 of PPG 9, the reasons for which the cSAC was designated and the SPA classified. The entry of 30 January 1996 on the Register of European Sites gives the reasons for which the SPA was classified.

The **Broads cSAC** and **Broadland SPA** includes land within: Alderfen Broad SSSI, Ant Broads and Marshes SSSI, Barnby Broad and Marshes SSSI, Broad Fen, Dilham SSSI, Bure Broads and Marshes SSSI, Burgh Common and Muckfleet Marshes SSSI, Calthorpe Broad SSSI, Cantley Marshes SSSI, Crostwick Marsh SSSI, Decoy Carr, Acle SSSI, Ducan's Marsh, Claxton SSSI, Geldeston Meadows SSSI, Hall Farm Fen, Hemsby SSSI, Halvergate Marshes SSSI, Hardley Flood SSSI, Limpenhoe Meadows SSSI, Ludham-Potter Heigham Marshes SSSI, Poplar Farm Meadows, Langley SSSI, Priory Meadows, Hickling SSSI, Shallam Dyke Marshes, Thurne SSSI, Smallburgh Fen SSSI, Sprat's Water and Marshes, Carlton Colville SSSI, Stanley and Alder Carrs, Aldeby SSSI, Upper Thurne Broads and Marshes SSSI, Upton Broads and Marshes SSSI and Yare Broads and Marshes SSSI.

The **Broads cSAC** additionally includes land within: Damgate Marshes, Acle SSSI and Trinity Broads SSSI.

Favourable Condition Table for Upper Thurne Broads & Marshes SSSI

The Favourable Condition Table will be used by English Nature and other relevant authorities to determine if a site is in favourable condition. Favourable condition is achieved when the targets given below are met.

The favourable condition table should inform the scope and nature of any ‘appropriate assessment’ under the Habitats Regulations, but an appropriate assessment will also require consideration of issues specific to the individual plan or project. The favourable condition table does not by itself provide a comprehensive basis on which to assess plans and projects as required under Regulations 20-21, 24, 48-50 and 54 - 85. The scope and content of an appropriate assessment will depend upon the location, size and significance of the proposed project. English Nature will advise on a case by case basis.

Following an appropriate assessment, competent authorities are required to ascertain the effect on the integrity of the site. The integrity of the site is defined in para C10 of PPG9 as the coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified. The determination of favourable condition is separate from the judgement of effect upon integrity. For example, there may be a time-lag between a plan or project being initiated and a consequent adverse effect upon integrity becoming manifest in the condition assessment. In such cases, a plan or project may have an adverse effect upon integrity even though the site remains in favourable condition.

Annual counts for qualifying bird species will be used by English Nature, in the context of five year peak means, together with available information on UK population and distribution trends, to assess whether the SPA is continuing to make an appropriate contribution to the Favourable Conservation Status of the species across Europe.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i>, <i>Alnion incanae</i>, <i>Salicion alvae</i>)	Parts of NVC types W2 and W5 and 6)	Extent	Extent/location of stands	<p>No loss of ancient semi-natural stands</p> <p>At least current area of recent semi-natural stands maintained, although their location may alter.</p> <p>At least the area of ancient woodland retained</p>	<p>* Stand loss due to natural processes eg in minimum intervention stands may be acceptable.</p> <p>* A high proportion of this type of woodland may be recent and hence a dynamic interchange with open wet communities may occur.</p> <p>* Stand destruction may occur if the understorey and ground flora are irretrievably damaged even if the canopy remains intact.</p> <p>* Loss = 0.5 ha or 0.5% of the stand area, whichever is the smaller.</p> <p>* 20% canopy cover is conventionally taken as the lower limit for an area to be considered as woodland. Stands of willow scrub may pose difficulties of definition.</p> <p>* Area and location of stands may be assessed remotely or by site visit.</p>

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		3.Regeneration potential	Successful establishment of young stems in gaps or on the edge of a stand	<ul style="list-style-type: none"> * Signs of seedlings growing through to saplings to young trees at sufficient density to maintain canopy density over a 10 yr period (or equivalent regrowth from coppice stumps). * No planting in stands. 	<ul style="list-style-type: none"> * A proportion of gaps at any one time may develop into permanent open space; equally some current permanent open space/glades may in time regenerate to closed canopy. * Regeneration may often occur on the edges of stands rather than in gaps within it. * In coppice most of the regeneration will be as stump regrowth. See JNCC Guidance Note on likely desirable levels of regeneration. * The minimum level of regeneration to be acceptable from a nature conservation viewpoint is likely to be much less than that needed where wood production is also an objective. * Assess this attribute by walking through the wood in spring/summer.
		4. Composition	<p>Cover of native versus non-native species (all layers)</p> <p>Death, destruction or replacement of native woodland species through effects of non-native fauna or external unnatural factors</p>	<ul style="list-style-type: none"> * At least the current level of site-native species maintained. * At least 90% of cover in any one layer of site-native or acceptable naturalised species. * Death, destruction or replacement of native woodland species through effects of introduced fauna or other external unnatural factors not more than 10% by number or area in a five year period. 	<ul style="list-style-type: none"> * In sites where there might be uncertainty as to what counts as site-native or as an acceptable naturalised species this must be made clear (eg the position of poplar). * Where cover in any one layer is less than 100% then the 90% target applies to the area actually covered by that layer. * Factors leading to the death or replacement of woodland species could include pollution, including eutrophication from adjacent farmland; new diseases (eg alder dieback). * Damage to species by non-native species that does not lead to their death or replacement by non woodland species (eg damage from squirrels to trees that non-the - less survive) is not necessarily unacceptable in nature conservation terms. * Excessive browsing/grazing by even native ungulates may be considered an unnatural external factor where it leads to undesirable shifts in the composition/structure of the stand, although this may be picked up by attributes 2 or 5 anyway. * Assess this attribute by a walk through the site.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		5. Species, habitats, structures characteristic of the site.	Ground flora type Distinctive and desirable elements for a given site eg. locally uncommon species such as <i>Carex elata</i> ; veteran trees or rich invertebrate assemblages. Patches of associated habitats and transitions eg to ash wood, open fen and open water	* 80% of ground flora cover referable to relevant NVC wet woodland community (W 2, 5 and 6) * Distinctive elements maintained at current levels and in current locations (where appropriate). * Patches and transitions maintained in extent and where appropriate location.	* Changes leading to these targets not being met may be acceptable where this is due to natural processes. * Distinctive elements and patches should be marked on maps for ease of checking in the field wherever possible. * If there are species groups/assemblages that cannot be assessed directly on a general site visit then surrogate features should be given where possible, eg dead wood concentrations for associated invertebrates.
Calcareous fens with <i>Cladium mariscus</i> and species of the <i>Caricion davallianae</i>	NVC type S2 S24 S25	Extent	Area (ha), measured periodically.	Maintain type and extent of NVC communities which are optimal for the interest feature. No significant decrease from reference level.	Map extent and position of main NVC communities, monitor every 5 years. Reference level to be determined.
		Floodplain/valley mire (E33)	Sward composition	Frequency of <i>Cladium mariscus</i>	Maintain extent and abundance of <i>Cladium mariscus</i> . Reference level to be determined.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
			Floristic quality of <i>Cladium mariscus</i> swamp (S2), <i>Phragmites australis</i> - <i>Peucedanum palustre</i> fen (S24) and <i>Phragmites australis</i> - <i>Eupatorium cannabinum</i> fen (S25) through the abundance of 'typical' species	Within the area occupied by target communities, the eponymous species and others of constancy V should be frequent.	Monitor every five years.
			Floristic quality of small sedge component of the vegetation	Maintain extent and abundance of small sedge component.	Monitor small sedge component every 5 years. Reference level to be determined
			Frequency or cover of tree / scrub spp.	No more than 5% cover, if in discrete stands, or no more than occasional throughout the sward	
		Sward structure	Extent of bare mud or peat visible without disturbing vegetation	No more than 5% of mire area	
			Frequency of hoof prints	No more than occasional over the mire as a whole	
		Water quality	Base rich, low fertility supply to vegetation	Maintain groundwater and other base rich-low nutrient water sources to the vegetation	These communities can be adversely affected by nutrient enrichment. In floodplain situations river water quality is critically important.
				Establish target base and NPK concentration and monitor annually.	It is important that irrigating waters are free from excessive plant nutrients. Reference level to be determined

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		Water quantity	Hydrological regime.	Maintain appropriate hydrological regime to support recognised vegetation types. Reference level to be determined	Better understanding of the functioning of sites is required, including the importance of groundwater and piezometric head Install dipwells in a network or transect and measure at least bimonthly.
		Water table	Level of water table for the S2 community	Within range -15 to +40cm, with standing water between tussocks	Install dipwells in a network or transect and measure at least bimonthly.
		Rare species.	Maintain or enhance populations of special or rare plant (and animal) species.	Species to be determined.	Identify special species and seek guidance in defining measures. Reference levels to be determined.
Molinia meadows on calcareous, peaty or clayey-silt-laden soils (<i>Molinion caeruleae</i>)	NVC type M24 M25	Extent	Total area (ha), mapped in relation to a site-specific reference level to be determined, in period early June - end of August.	No reduction in area and any consequent fragmentation without prior consent	Recoverable reduction = unfavourable; non-recoverable reduction = partially destroyed. Temporary reductions related to natural variation in hydrological conditions should be noted as such where information allows.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Unimproved marshy grassland		Sward composition: positive indicator species	Record the frequency of positive indicator species from the list below to give an overall total of 2 frequent and 3 occasional. Record in period early June - end of August. <i>Anagallis tenella,</i> <i>Angelica sylvestris,</i> <i>Cirsium dissectum,</i> <i>Erica tetralix,</i> <i>Eupatorium cannabinum,</i> <i>Filipendula ulmaria,</i> <i>Galium uliginosum/</i> <i>Galium palustre,</i> Orchidaceae spp., <i>Pedicularis sylvatica,</i> <i>Potentilla erecta,</i> small blue-green <i>Carex</i> spp. (leaves less than 5mm wide) (<i>C. flacca, C.nigra, C.panicea</i>), <i>Sphagnum</i> spp., <i>Succisa pratensis,</i> <i>Valeriana dioica,</i> <i>Valeriana officinalis ,</i> <i>Viola palustris.</i>	Overall total of at least two species/taxa frequent plus at least three species/taxa occasional throughout the sward.	Choice of species related to NVC types, restriction to unimproved grassland and wetness characteristics of habitat, all satisfactory when inside target. Among possible species that could be used, choice further restricted by ease of identification, visibility in recording period.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		Sward composition: frequency and cover of <i>Molinia caerulea</i>	Record the frequency and % cover of <i>Molinia caerulea</i> . Record in period early June - end of August.	At least frequent throughout the sward but no more than 80% cover	<i>Molinia</i> is a characteristic component of the community and should thus be at least frequent. However, increasing cover exceeding upper target is indicative of insufficient management by grazing or cutting.
		Sward composition: negative indicator species	Record the frequency and % cover of negative indicator species. Record in period early June- end of August. <i>Cirsium arvense</i> , <i>Cirsium vulgare</i> , <i>Rumex crispus</i> , <i>Rumex obtusifolius</i> , <i>Urtica dioica</i> .	No species more than occasional throughout the sward or singly or together more than 5% cover	Invasive species chosen to indicate problems of eutrophication and disturbance from various sources when outside target eg poaching, stock feeding.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		Sward composition: cover of <i>Juncus</i> spp	Record the % cover of <i>Juncus</i> species from groups A and B. Record in period early June - end of August. Group A: jointed rushes (<i>Juncus acutiflorus</i> , <i>J. articulatus</i> , <i>J. subnodulosus</i>) Group B: <i>Juncus conglomeratus</i> , <i>J. effusus</i> and <i>J. inflexus</i> .	All species combined no more than 80% cover, of which no more than 50% made up of spp. from Group B	<i>Juncus</i> spp can be characteristic components of the communities. However, increasing cover is indicative of insufficient management by grazing or cutting and/or waterlogging. Group B species may indicate problems of eutrophication from various sources when outside target eg stock feeding, fertiliser use.
		*Sward composition: negative indicator species.	Record the % cover of negative indicator species. Record in period early June - end of August. <i>Cirsium palustre</i> .	No more than 20% cover.	This species may be indicative of disturbance from various sources when outside target eg poaching, stock feeding.
		*Sward composition: negative indicator species.	Record the % cover of negative indicator species. Record in period early June - end of August. <i>Deschampsia cespitosa</i>	No more than 10% cover.	Increasing cover of <i>Deschampsia cespitosa</i> outside target may be indicative of insufficient management by grazing or cutting, overgrazing, disturbance by excessive poaching or altered hydrology eg reduced water movement in the soil profile during the year resulting in anaerobic conditions. Increasing cover may lead to reduced species richness in the community.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		*Sward composition: negative indicator species	Record the % cover or frequency of negative indicator species in period early June - end of August. All tree and scrub species excluding <i>Salix repens</i> and <i>Myrica gale</i> , considered together. NB If scrub/tree species in pastures are more than occasional throughout the sward but less than 5% cover, they are soon likely to become a problem if grazing levels are not sufficient or if scrub control is not being carried out.	No more than 5% cover.	Invasive species outside target shows that habitat is not being managed sufficiently eg lack of or insufficient grazing/cutting
		*Sward composition: % cover of <i>Phragmites australis</i>	Record the % cover of <i>Phragmites australis</i> in period early June-end of August.	No more than 10% cover.	Increasing cover of <i>Phragmites australis</i> outside target may be indicative of insufficient management by grazing or cutting. Lack of management may ultimately convert the community to tall-fen in some geographical areas.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		Sward composition: % cover of <i>Myrica gale</i> .	Record the % cover of <i>Myrica gale</i> in period early June - end of August.	No more than 10% cover	If <i>Myrica</i> cover outside target this shows that habitat is not being managed sufficiently eg lack of or insufficient grazing/cutting
		Sward composition: negative indicator species.	Record the frequency and % cover of negative indicator species. Record in period early June - end of August. <i>Senecio aquaticus</i>	No more than occasional throughout the sward or more than 5% cover	Outside target can discourage hay/grazing management because the species is toxic to livestock, and is palatable when dry.
		Sward structure: average height	Record sward height in period early June - end of August. (Upper target refers to pastures only.)	M24a Sward 5 cm or greater (excluding <i>Juncus</i> spp.) but no more than 25% over 60 cm M24b Sward 2 cm or greater (excluding <i>Juncus</i> spp.) but no more than 25% over 15 cm	Sward height above upper target shows that habitat is not being managed sufficiently eg lack of or insufficient grazing or if below lower target, is being overgrazed.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		Sward structure: litter	Record cover of litter where in a more or less continuous layer, distributed either in patches or in one larger area. Record in period early June - end of August for pastures.	Total extent no more than 25% of the sward	Outside target indicates biomass removal is insufficient eg lack of or insufficient grazing or not cut for hay.
		Sward structure: bare ground	Record extent of bare ground distributed through the sward, visible without disturbing the vegetation. Record in period early June - end of August.	No more than 10%	Outside target indicates problems with stock management eg poaching, supplementary feeding.
Transition mires and quaking bogs.	NVC type M5	Extent	Area (ha), measured periodically.	Maintain type and extent of NVC communities which are optimal for the interest feature. No significant decrease from reference level.	Map extent and position of main NVC communities, monitor every 5 years. Reference level to be determined.
		Sward structure	Frequency of hoof prints	No more than occasional over the mire as a whole	
Transitional as from open water to solid peat and/or from one trophic status to another.					

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Floodplain/valley mire (E32)			Extent of bare mud or peat visible without disturbing vegetation	No more than 5% of mire area	
		Sward composition	Floristic quality of <i>Carex rostrata-Sphagnum squarrosum</i> mire (M5) through the abundance of 'typical' species	Within the area occupied by target communities, the eponymous species and others of constancy V and IV should be abundant.	
			Frequency or cover of tree / scrub spp.	No more than 5% cover, if in discrete stands, or no more than occasional throughout the sward	It is acceptable to have component wet woodland communities and so the presence of scattered or weak scrub is not always a negative feature.
		Water quality	Maintenance of trophic status	Maintain the raft characteristics. Exclude surface and drainage water likely to increase fertility.	The balance between seepage and surface water must be maintained, and attention given to any differences of base-richness between competing sources of water.
		Water quantity	Stable groundwater	Water levels which does not fluctuate more than 30cm annually.	Install dipwells and measure at least bimonthly. Control of the range of vertical water level fluctuation may be important to maintain the delicate balance between base-rich and base-poor conditions.
		Physical condition of raft	Degree of movement capable by raft.	Presence of raft that trembles when walked upon.	Check for evidence of trophic change.
		Rare species	Maintain or enhance populations of special or rare plant (and animal) species	Species to be determined.	Identify special species and seek guidance in defining measures. Reference levels to be determined.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
22.12/44 Hard oligo-mesotrophic waters with benthic vegetation of <i>Chara</i> formations	Almost exclusively type '4' of the GB Standing Water Classification. Very rarely types '5' and '10'.	Extent of <i>Chara</i> beds.	Check extent of <i>Chara</i> beds in July on an annual basis.	Maintain type and extent of <i>Chara</i> vegetation which is optimal for the interest feature. No significant decrease from reference level. Reference level to be determined.	<i>Chara</i> community. <i>Chara</i> formations of various species. Endangered/Vulnerable/Rare species are <i>Chara intermedia</i> , <i>Chara baltica</i> , <i>Chara canescens</i> , <i>Chara rudis</i> and <i>Chara connivens</i> ; and nationally scarce species are <i>Chara aspersa</i> , <i>Chara contraria</i> , <i>Chara pedunculata</i> and <i>Chara curta</i> . All are potentially components of a supporting community of <i>Myriophyllum spicatum</i> , <i>Potamogeton</i> species, <i>Callitriche</i> species and <i>Nymphaea alba/Nuphar lutea</i> . Lakes often fringed by <i>Phragmites australis</i> , <i>Typha angustifolia</i> and <i>Schoenoplectus lacustris</i> . Baseline survey should be carried out to determine present extent of <i>Chara</i> beds. Check for deterioration, extent of epiphytic growth on <i>Chara</i> . "Holes" in <i>Chara</i> beds should be monitored. <i>Elodea canadensis</i> should be absent. As <i>Chara</i> species are a colonising aspect of seral progression supporting macrophyte community may have to be managed to prevent seral progression. Extent will be variable according to site and can be variable according to seasonal changes In many cases <i>Chara</i> will be dominant feature.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Standing water, lakes, turf ponds and ditch systems.		Extent of supporting community including emergent vegetation.	Check community of associated macrophytes including, rare species, on an annual basis. Rare species include <i>Najas marina</i> and <i>Nitellopsis obtusa</i> . Maintain Chara and other species diversity.	Stable not expanding or contracting supporting community over 5 year period within limits of $\pm 10\%$ annually.	
		Water quality	Absence of filamentous algae and unicellular algal blooms. Establish Total P range by quarterly measurements over 3 year period, thereafter annually July/August.	For <i>Chara</i> lake $30 \mu\text{g l}^{-1}$ total phosphorus or below. Eutrophic conditions above $30 \mu\text{g l}^{-1}$ total phosphorus should not be prevalent.	Filamentous algae should be absent. The range of marl lakes exhibit a continuum of trophic condition from oligotrophy to low eutrophy. So the trophic condition for each marl lake type should be maintained. If filamentous algae present. Check for diffuse or point sources of pollution. Check Total P levels in aquifer if aquifer fed, check also that site not used for black-headed gull roosting or breeding. The target level should be set for individual SAC's and an acceptable range established. Increases in Total P level suggest need to move from annual July/August check back to more intensive quarterly samples to verify whether change is real.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		Sediment	Check condition of sediment and measure overall cover of marl every 10 years.	Marl production desirable, although this may be low or absent in oligotrophic hard waters. Some peat slumping acceptable, provided this is not induced due to land drainage.	Check immediate catchment area for drainage or land use change which might induce high sediment loads to enter system.
		Hydrology	Check water level in July annually.	Maintenance of stable water level desirable, although seasonal fluctuations expected.	Water level change downwards acceptable only in dry years. If lake level lowering due to outside water demands such as aquifer abstraction then counter measures need to be instigated.
22.13 Natural eutrophic lakes with Magnopotamion or Hydrocharition type vegetation.	NVC types: A3 A9 A13 A4 Types '7', '8', '9' and '10' of the GB Standing Water Classification.	Extent of community.	Check extent of beds in July/August every 4 years.	Extensive beds of submerged macrophytes should be present. Maintain mixed community.	Submerged vegetation characterised by broad leaved <i>Potamogeton</i> species such as <i>Potamogeton perfoliatus</i> , <i>P. lucens</i> , <i>P. crispus</i> , <i>P. natans</i> , <i>P. x salicifolius</i> , <i>P. coloratus</i> , <i>P. polygonifolius</i> , <i>P. gramineus</i> , <i>P. alpinus</i> and <i>Hydrocharition</i> type vegetation. <i>Hydrocharis morsus-ranae</i> is a very rare associate with the <i>Magnopotamion</i> in the UK. Its community components are present, however, mainly <i>Spirodela polyrhiza</i> , <i>Lemna minor</i> , <i>Hippuris vulgaris</i> , <i>Utricularia vulgaris</i> and <i>Apium inundatum</i> . Community should be mixed and no one species should be present above 40% level of total amount of macrophyte presence.
Standing water- Broads, turf ponds and ditch systems		Extent of <i>Potamogeton</i> species <i>Magnopotamion</i> .	Check species presence in July/August every 4 years.	Maintain species presence of all <i>Magnopotamion</i> and fine leaved <i>Potamogetons</i> .	No one <i>Potamogeton</i> species should be present above 40% level of total amount or level of macrophyte presence (see Water Quality comment).

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		Extent of nationally scarce or threatened species.	Establish population size and position of nationally scarce, rare or threatened species over a period of 3 years, on a quarterly basis; thereafter every two years in July/August.	Maintain presence of all nationally scarce, rare or threatened plant species.	Nationally scarce, rare or threatened species can vary in population size and extent due to temporal/seasonal changes in climate which affects physical variables such as water temperature.
		Water quality	Arrange for analysis of quarterly measurements of Total P for first three years; thereafter annually in July/August.	Maintain water quality particularly Total P levels. For southern systems 100 $\mu\text{g l}^{-1}$ or below, down to 65 $\mu\text{g l}^{-1}$.	The variable targets for Total P reflects the geographical range of this trophic state. The target for Total P should be set for individual SAC's and an acceptable range established. Increases in Total P suggest a need to move from annual July/August check, back to more intensive quarterly samples to verify whether change is real. Also check for cover shifts of macrophytes and dominant presence of pollution tolerant species above 40% level such as <i>Potamogeton pectinatus</i> , <i>Myriophyllum spicatum</i> and/or <i>Ceratophyllum demersum</i> .
		Water quantity	Check lake levels during July/August.	Maintain hydrology of lake or ditch system.	Hydrology involves not only lake or ditch levels but flushing rates; prevent lowering or raising of lake or ditch level through modification of outfalls. With ditch systems aim for constant high water table throughout the year Water abstraction may represent a significant issue through the reduction of ground water and flushing flows into marginal ditch systems.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		Sediment	Check for excessive growths of individual macrophytes ie above 40%.	Maintain sediment quality and quantity.	Effects of increased macrophyte growth also relates to water quality; if this is at target levels, then enrichment of sediments is an issue if broad leaved <i>Potamogeton</i> species decline and fine leaved <i>Potamogeton pectinatus</i> increases above 40% level or <i>Myriophyllum spicatum</i> / <i>Ceratophyllum demersum</i> become dominant. Introduced fish and recreational use of site might through sediment disturbance move sites out of favourable condition. Check for increases in siltation from catchment use changes or changes in sewage treatment.
River	Otter <i>Lutra lutra</i>	Water quality	EA scale	"Good", with no pollution incidents	Refer to Environment Agency for data
		Flow rate	Mean annual flow rate	No reduction attributable to increased abstraction.	Data from Environment Agency
		Site integrity	Total area	No reduction of fragmentation of area	
		Fish stocks	EA assessment	Fish stocks appropriate to the nutrient status of the river No significant decline in fish biomass or species diversity	Refer to Environment Agency for sample data
		Disturbance	Extent of public access to river	No significant change to river or bankside usage; no significant development	
		Bankside cover	Proportion of bank lined with trees, scrub or other thick cover	No overall permanent decrease	Some change acceptable as long as it is appropriately mitigated
		Presence of otters	Signs of otters	Signs of otters found at least once per year	Use data from national or county surveys

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
All habitats: Grassland Improved, Swamp, Marginal and Inundation, Standing Water	Annex 1 species of European importance and waterfowl assemblage including migratory species of European and national importance.	Extent of habitat.	Area (ha), measured periodically (frequency to be determined).	No significant decrease from reference level.	For all habitats for all qualifying species. Methodology for assessing target to be determined. Reference level to be determined.
		Disturbance in roosting and feeding areas	Reduction or displacement of birds, measured periodically (frequency to be determined).	No significant displacement of birds attributable to human disturbance in relation to reference level.	All qualifying breeding and wintering annex 1 and migratory species. Methodology for assessing target to be determined. Reference level to be determined.
All habitats: Grassland Improved, Swamp, Marginal and Inundation, Standing Water	Annex 1 species of European importance.	Food Availability	Abundance of live mammals and birds, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of food species year round in relation to reference level.	Small-medium sized mammals (voles, mice, rabbits) and birds (pipits to ducks) are important prey in the breeding season for marsh harriers and during the winter for hen harriers. Methodology for assessing target to be determined. Reference level to be determined.
Grassland Improved	Annex 1 species of European importance and migratory species of European and national importance.	Absence of obstruction to viewlines	Open terrain relatively free of obstructions (feeding, anti-predator, roosting), measured periodically (frequency to be determined).	No significant reduction in view-lines in feeding and roosting areas during the winter season.	Bewick's swan, whooper swan, pink-footed goose, white-fronted goose and wigeon prefer unrestricted views over 500 metres. Ruff and bean goose prefer unrestricted views over 200 metres. Methodology for assessing target to be determined.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Grassland Improved	Annex 1 species of European importance.	Food Availability	Presence and abundance of soil and ground surface invertebrates, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of prey species during the winter season in relation to reference level.	Dipteran flies, beetles and earthworms are important for Ruff. Methodology for assessing target to be determined. Reference level to be determined.
Grassland Improved	Annex 1 species of European importance and migratory species of European and national importance.	Food availability	Presence and abundance of soft leaved plants , measured periodically (frequency to be determined).	No significant reduction in presence and abundance of food species during the winter season in relation to reference level.	<i>Lolium perenne, Glyceria fluitans, Phleum pratense, Rorippa amphibia, Alopecurus geniculatus</i> for Bewick's swan and whooper swan. <i>Trifolium repens, Poa pratensis</i> and <i>Alopecurus geniculatus</i> are important for pink-footed goose. <i>Trifolium repens, Lolium perenne, Poa trivialis</i> and <i>Holcus lanatus</i> are important for white-fronted goose. <i>Lolium, Glyceria, Agrostis</i> and <i>Alopecurus spp.</i> for wigeon. Methodology for assessing target to be determined. Reference level to be determined.
Grassland Improved	Nationally important migratory species.	Food availability	Presence and abundance of rough and smooth meadow grasses and crops, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of food species during the winter season in relation to reference level.	<i>Poa spp.</i> , potatoes, sugar beat and wheat are important for bean goose. Methodology for assessing target to be determined. Reference level to be determined.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Grassland Improved	Annex 1 species of European importance and migratory species of European and national importance.	Vegetation characteristics	Predominantly short grassland swards (feeding and roosting during the winter period), measured periodically (frequency to be determined).	Vegetation height throughout areas used for feeding and roosting during the winter season should not deviate significantly.	<p>Bean goose require a sward height <20 cm within feeding areas during the winter season.</p> <p>Pink-footed goose and white-fronted goose require a sward height 10-20 cm within feeding areas during the winter season.</p> <p>Bewick's swan and whooper swan require a sward height <10 cm within feeding areas during the winter season.</p> <p>Ruff require a vegetation height of <10cm within roosting areas during the winter season.</p> <p>Wigeon require a sward height <5 cm within feeding areas during the winter season.</p> <p>Methodology for assessing target to be determined.</p>
Grassland Improved	Nationally important migratory species.	Proximity of roosting areas to feeding areas	Roosting areas close to feeding areas, measured periodically (frequency to be determined).	No significant reduction in proximity of roosting areas to feeding areas during the winter season.	<p>Wigeon require daytime feeding areas and roosting areas within c50 metres of each other.</p> <p>Methodology for assessing target to be determined.</p>
Grassland Improved	Annex 1 species of European importance.	Hydrology/ Flow	Wet fields with surface pools, measured periodically (frequency to be determined).	No significant reduction in soggy or flooded areas during the winter season.	<p>Bewick's swan require 25-50% of the area soggy or flooded.</p> <p>Ruff also prefer permanently wet and flooded areas with a water depth of <3 cm.</p> <p>Methodology for assessing target to be determined.</p>

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Swamp, Marginal and Inundation	Annex 1 species of European importance.	Landscape	Large, unbroken expanse of emergent vegetation (nesting, feeding, concealment), measured periodically (frequency to be determined).	No significant reduction in expanse of emergent vegetation year round.	Bittern and Marsh Harrier require continuous reed over >20ha. Methodology for assessing target to be determined.
Swamp, Marginal and Inundation	Annex 1 species of European importance.	Vegetation characteristics	Pure reed stand with vigorous growth over whole area (nesting, concealment), measured periodically (frequency to be determined).	No significant reduction in extent of vigorous growth over the pure reed stand, maintained through cutting regime.	Bittern and marsh harrier require at least 30% of the reedbed uncut and the remainder not more than 6 years old with no more than 20% cut in any year. Methodology for assessing target to be determined.
Swamp, Marginal and inundation	Annex 1 species of European importance.	Water depth	Shallow water within reeds plus frequent deep pools and channels (feeding), measured periodically (frequency to be determined).	Water depth and extent of shallows within reeds should not deviate significantly with no significant reduction in the presence of deep pools and channels year round.	Bittern and marsh harrier require water throughout the reedbed of 10-30cm, and bittern also require pools 2-4m deep. Channels for bittern should be up to 2.5m deep, consisting of a deep central channel (>1.5m) and 1m deep/5m wide shallow margin on at least one side. Methodology for assessing target to be determined.
Swamp, Marginal and Inundation	Annex 1 species of European importance.	Hydrology flow	Stable Water levels, measured periodically (frequency to be determined).	Water levels should not deviate significantly during the breeding season.	<10cm fluctuation is required during the breeding season for Marsh Harrier. Methodology for assessing target to be determined.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Swamp, Marginal and Inundation Standing Water	Annex 1 species of European importance.	Food Availability	Presence and abundance of fish and amphibians, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of prey species year round, in relation to reference level.	Eel, rudd, roach of 6-35cm and frogs/toads are important for Bittern. Methodology for assessing target to be determined. Reference level to be determined.
Standing Water	Annex 1 species of European importance and migratory species of European and national importance.	Food Availability	Presence and abundance of aquatic plants, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of food species during the winter season in relation to reference level.	<i>Potamogeton, Ceratophyllum, Zannichellia, Myriophyllum, Ranunculus and Chara spp.</i> for Bewick's and whooper swan. <i>Glyceria fluitans, Agrostis stolonifera, Chara, Potamogeton and Ceratophyllum spp</i> for gadwall. <i>Scirpus, Eleocharis, Carex, Potamogeton and Glyceria</i> for shoveler. <i>Chara, Nitella and Potamogeton spp.</i> are important for pochard and tufted duck. <i>Chara, Cladophora, Potamogeton, Ruppia, Ranunculus and Elodea</i> are important for Coot. Methodology for assessing target to be determined. Reference level to be determined.
Standing Water	Nationally important migratory species.	Food Availability	Presence and abundance of seed bearing plants, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of food species during the winter season in relation to reference level.	<i>Polygonum, Eleocharis, Rumex and Ranunculus</i> are important for Teal. Methodology for assessing target to be determined. Reference level to be determined.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Standing Water	Migratory species of European and national importance.	Food availability	Presence and abundance of aquatic invertebrates, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of prey species during the winter season in relation to reference level.	Hydrobia, crustaceans, caddisflies, diptera and beetles are important for shoveler. Hydrobia, flies, caddisfly, beetles and bugs are important for teal. Methodology for assessing target to be determined. Reference level to be determined.
Standing Water	Nationally important migratory species.	Food availability	Presence and abundance benthic invertebrates, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of prey species during the winter season in relation to reference level.	Chironomid larvae are important for pochard. <i>Dreissena polymorpha</i> , chironomid larvae, <i>Gammarus</i> and <i>Hydrobia</i> are important for tufted duck. Methodology for assessing target to be determined. Reference level to be determined.
Standing Water	Nationally important migratory species.	Food availability	Presence and abundance of surface and benthic invertebrates, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of prey species during the winter season in relation to reference level.	Mytilus, <i>Dreissena polymorpha</i> and caddis-fly larvae are important for coot. Methodology for assessing target to be determined. Reference level to be determined.
Standing Water	Nationally important migratory species.	Food availability	Presence and abundance of fish, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of prey species during the winter season in relation to reference level.	Fish of 10-25 cm are important for cormorant. Fish of 3-21 cm are important for great crested grebe. Methodology for assessing target to be determined. Reference level to be determined.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Standing Water	Annex 1 species of European importance and migratory species of European and national importance.	Water depth	Areas of shallow medium and deep water (feeding), measured periodically (frequency to be determined).	Water depths should not deviate significantly during the winter season.	<p>Cormorant require a water depth of 2-10m.</p> <p>Great crested grebe require a water depth of 1-3m.</p> <p>Bewick's and whooper swan require a water depth of <1m.</p> <p>Gadwall require a water depth of <25cm. A kleptoparasitic relationship with Coot can allow Gadwall to potentially exploit deeper areas up to 2m in depth.</p> <p>Shoveler and teal require a water depth of <30cm.</p> <p>Coot require a water depth of 0.5-2m.</p> <p>Pochard and tufted duck require a water depth of 2-5m.</p> <p>Methodology for assessing target to be determined.</p>
Standing Water	Annex 1 species of European importance.	Water area	Large open areas of water(feeding), measured periodically (frequency to be determined).	No significant reduction in the area of open water for feeding year round.	<p>Bittern require one or more freshwater pools of >0.5ha not exceeding 20% of reedbed area overall.</p> <p>Methodology for assessing target to be determined.</p>

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Standing Water	Annex 1 species of European importance and migratory species of European and national importance.	Water area	Large open areas of water (feeding, roosting), measured periodically (frequency to be determined).	No significant reduction in the area of open water for feeding and roosting during the winter season.	<p>Cormorant and pink-footed goose require one or more fresh waters of >20ha.</p> <p>Bewick's and whooper swan require one or more fresh waters of >10ha.</p> <p>Pochard require one or more fresh waters of >6ha.</p> <p>Bean geese require one or more freshwaters of 3-6 ha.</p> <p>Tufted duck require one or more freshwaters of >5ha.</p> <p>Coot require one or more freshwaters of >2ha.</p> <p>Great crested grebe require one or more freshwaters of >1ha.</p> <p>Methodology for assessing target to be determined.</p>
Standing Water	Annex 1 species of European importance.	Hydrology/ Flow	Fluctuating water levels, measured periodically (frequency to be determined).	Range of water level fluctuation providing a succession of surface water areas (feeding) during the winter season.	<p>Ideally Bewick's and whooper swan require water levels fluctating by 5-15% per month.</p> <p>Methodology for assessing target to be determined.</p>



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cSAC: The Broads

Component SSSI: Trinity Broads

Conservation objectives for the European Interest on the SSSI

The conservation objectives for the European interest on the SSSI are:

to maintain*, in favourable condition, the:

- Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior*.
- *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*).
- Natural eutrophic lakes with *Magnopotamion* or *Hydrocharition*-type vegetation.
- Hard oligo-mesotrophic waters with benthic vegetation of *Chara* spp..

to maintain*, in favourable condition, the habitats for the population of:

- Desmoulin's whorl snail (*Vertigo moulinsiana*).
- Otter (*Lutra lutra*).

* maintenance implies restoration if the feature is not currently in favourable condition.

The Conservation Objectives for The Broads candidate Special Area of Conservation are, in accordance with para C 10 of PPG 9, the reasons for which the cSAC was designated.

The **Broads cSAC** includes land within: Alderfen Broad SSSI, Ant Broads and Marshes SSSI, Barnby Broad and Marshes SSSI, Broad Fen, Dilham SSSI, Bure Broads and Marshes SSSI, Burgh Common and Muckfleet Marshes SSSI, Calthorpe Broad SSSI, Cantley Marshes SSSI, Crostwick Marsh SSSI, Damgate Marshes, Acle SSSI, Decoy Carr, Acle SSSI, Ducan's Marsh, Claxton SSSI, Geldeston Meadows SSSI, Hall Farm Fen, Hemsby SSSI, Halvergate Marshes SSSI, Hardley Flood SSSI, Limpenhoe Meadows SSSI, Ludham-Potter Heigham Marshes SSSI, Poplar Farm Meadows, Langley SSSI, Priory Meadows, Hickling

SSSI, Shallam Dyke Marshes, Thurne SSSI, Smallburgh Fen SSSI, Sprat's Water and Marshes, Carlton Colville SSSI, Stanley and Alder Carrs, Aldeby SSSI, Trinity Broads SSSI, Upper Thurne Broads and Marshes SSSI, Upton Broads and Marshes SSSI and Yare Broads and Marshes SSSI.

Favourable Condition Table for Trinity Broads SSSI

The Favourable Condition Table will be used by English Nature and other relevant authorities to determine if a site is in favourable condition. Favourable condition is achieved when the targets given below are met.

The favourable condition table should inform the scope and nature of any ‘appropriate assessment’ under the Habitats Regulations, but an appropriate assessment will also require consideration of issues specific to the individual plan or project. The favourable condition table does not by itself provide a comprehensive basis on which to assess plans and projects as required under Regulations 20-21, 24, 48-50 and 54 - 85. The scope and content of an appropriate assessment will depend upon the location, size and significance of the proposed project. English Nature will advise on a case by case basis.

Following an appropriate assessment, competent authorities are required to ascertain the effect on the integrity of the site. The integrity of the site is defined in para C10 of PPG9 as the coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified. The determination of favourable condition is separate from the judgement of effect upon integrity. For example, there may be a time-lag between a plan or project being initiated and a consequent adverse effect upon integrity becoming manifest in the condition assessment. In such cases, a plan or project may have an adverse effect upon integrity even though the site remains in favourable condition.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Molinia meadows on calcareous, peaty or clayey-silt-laden soils (<i>Molinion caeruleae</i>) Unimproved marshy grassland	NVC type M24	Extent	Total area (ha), mapped in relation to a site-specific reference level to be determined, in period early June - end of August.	No reduction in area and any consequent fragmentation without prior consent	Recoverable reduction = unfavourable; non-recoverable reduction = partially destroyed. Temporary reductions related to natural variation in hydrological conditions should be noted as such where information allows.
		Sward composition: positive indicator species	Record the frequency of positive indicator species from the list below to give an overall total of 2 frequent and 3 occasional. Record in period early June - end of August. <i>Anagallis tenella,</i> <i>Angelica sylvestris,</i> <i>Cirsium dissectum,</i> <i>Erica tetralix,</i> <i>Eupatorium cannabinum,</i> <i>Filipendula ulmaria,</i> <i>Galium uliginosum/</i> <i>Galium palustre,</i> Orchidaceae spp., <i>Pedicularis sylvatica,</i>	Overall total of at least two species/taxa frequent plus at least three species/taxa occasional throughout the sward.	Choice of species related to NVC types, restriction to unimproved grassland and wetness characteristics of habitat, all satisfactory when inside target. Among possible species that could be used, choice further restricted by ease of identification, visibility in recording period.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
			<i>Potentilla erecta</i> , small blue-green <i>Carex</i> spp. (leaves less than 5mm wide) (<i>C. flacca</i> , <i>C. nigra</i> , <i>C. panicea</i>), <i>Sphagnum</i> spp., <i>Succisa pratensis</i> , <i>Valeriana dioica</i> , <i>Valeriana officinalis</i> , <i>Viola palustris</i> .		
		Sward composition: frequency and cover of <i>Molinia caerulea</i>	Record the frequency and % cover of <i>Molinia caerulea</i> . Record in period early June - end of August.	At least frequent throughout the sward but no more than 80% cover	<i>Molinia</i> is a characteristic component of the community and should thus be at least frequent. However, increasing cover exceeding upper target is indicative of insufficient management by grazing or cutting.
		Sward composition: negative indicator species	Record the frequency and % cover of negative indicator species. Record in period early June- end of August. <i>Cirsium arvense</i> , <i>Cirsium vulgare</i> , <i>Rumex crispus</i> , <i>Rumex obtusifolius</i> , <i>Urtica dioica</i> .	No species more than occasional throughout the sward or singly or together more than 5% cover	Invasive species chosen to indicate problems of eutrophication and disturbance from various sources when outside target eg poaching, stock feeding.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		Sward composition: cover of <i>Juncus</i> spp	Record the % cover of <i>Juncus</i> species from groups A and B. Record in period early June - end of August. Group A: jointed rushes (<i>Juncus acutiflorus</i> , <i>J. articulatus</i> , <i>J. subnodulosus</i>) Group B: <i>Juncus conglomeratus</i> , <i>J. effusus</i> and <i>J. inflexus</i> .	All species combined no more than 80% cover, of which no more than 50% made up of spp. from Group B	<i>Juncus spp</i> can be characteristic components of the communities. However, increasing cover is indicative of insufficient management by grazing or cutting and/or waterlogging. Group B species may indicate problems of eutrophication from various sources when outside target eg stock feeding, fertiliser use.
		*Sward composition: negative indicator species.	Record the % cover of negative indicator species. Record in period early June - end of August. <i>Cirsium palustre</i> .	No more than 20% cover.	This species may be indicative of disturbance from various sources when outside target eg poaching, stock feeding.
		*Sward composition: negative indicator species.	Record the % cover of negative indicator species. Record in period early June - end of August. <i>Deschampsia cespitosa</i>	No more than 10% cover.	Increasing cover of <i>Deschampsia cespitosa</i> outside target may be indicative of insufficient management by grazing or cutting, overgrazing, disturbance by excessive poaching or altered hydrology eg reduced water movement in the soil profile during the year resulting in anaerobic conditions. Increasing cover may lead to reduced species richness in the community.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		*Sward composition: negative indicator species	Record the % cover or frequency of negative indicator species in period early June - end of August. All tree and scrub species excluding <i>Salix repens</i> and <i>Myrica gale</i> , considered together.	No more than 5% cover.	Invasive species outside target shows that habitat is not being managed sufficiently eg lack of or insufficient grazing/cutting *If scrub/tree species in pastures are more than occasional throughout the sward but less than 5% cover, they are soon likely to become a problem if grazing levels are not sufficient or if scrub control is not being carried out.
		*Sward composition: % cover of <i>Phragmites australis</i>	Record the % cover of <i>Phragmites australis</i> in period early June-end of August.	No more than 10% cover.	Increasing cover of <i>Phragmites australis</i> outside target may be indicative of insufficient management by grazing or cutting. Lack of management may ultimately convert the community to tall-fen in some geographical areas.
		Sward composition: % cover of <i>Myrica gale</i> .	Record the % cover of <i>Myrica gale</i> in period early June - end of August.	No more than 10% cover	If <i>Myrica</i> cover outside target this shows that habitat is not being managed sufficiently eg lack of or insufficient grazing/cutting
		Sward composition: negative indicator species.	Record the frequency and % cover of negative indicator species. Record in period early June - end of August. <i>Senecio aquaticus</i>	No more than occasional throughout the sward or more than 5% cover	Outside target can discourage hay/grazing management because the species is toxic to livestock, and is palatable when dry.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		Sward structure: average height	Record sward height in period early June - end of August. (Upper target refers to pastures only.)	M24b, M24c Sward 2 cm or greater (excluding <i>Juncus</i> spp.) but no more than 25% over 15 cm	Sward height above upper target shows that habitat is not being managed sufficiently eg lack of or insufficient grazing or if below lower target, is being overgrazed.
		Sward structure: litter	Record cover of litter where in a more or less continuous layer, distributed either in patches or in one larger area. Record in period early June - end of August for pastures.	Total extent no more than 25% of the sward	Outside target indicates biomass removal is insufficient eg lack of or insufficient grazing or not cut for hay.
		Sward structure: bare ground	Record extent of bare ground distributed through the sward, visible without disturbing the vegetation. Record in period early June - end of August.	No more than 10%	Outside target indicates problems with stock management eg poaching, supplementary feeding.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i>, <i>Alnion incanae</i>, <i>Salicion alvae</i>)	Parts of NVC types W2 and W5 and 6)	Extent	Extent/location of stands	<p>No loss of ancient semi-natural stands</p> <p>At least current area of recent semi-natural stands maintained, although their location may alter.</p> <p>At least the area of ancient woodland retained</p>	<p>* Stand loss due to natural processes eg in minimum intervention stands may be acceptable.</p> <p>* A high proportion of this type of woodland may be recent and hence a dynamic interchange with open wet communities may occur.</p> <p>* Stand destruction may occur if the understorey and ground flora are irretrievably damaged even if the canopy remains intact.</p> <p>* Loss = 0.5 ha or 0.5% of the stand area, whichever is the smaller.</p> <p>* 20% canopy cover is conventionally taken as the lower limit for an area to be considered as woodland. Stands of willow scrub may pose difficulties of definition.</p> <p>* Area and location of stands may be assessed remotely or by site visit.</p>

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Semi-natural woodland		2. Natural processes and structural development	Age/size class variation within and between stands; presence of open space and old trees; dead wood lying on the ground; standing dead trees Structures associated with the hydrological regime also need to be considered.	<ul style="list-style-type: none"> * At least the current level of structural diversity maintained. * Understorey (2-5m) present over at least 20% of total stand area * Ground flora present over at least 50% of area excluding temporary pool areas * Canopy cover present over 30-90 % of stand area * Age class structure appropriate to the site, its history and management. * A minimum of 3 fallen lying trees or major branches per ha and 4 trees per ha allowed to die standing. * At least the current level of natural hydrological features should be maintained (channels, pools, periodic flooding) 	<ul style="list-style-type: none"> * Any changes leading to exceedance of these limits due to natural processes are likely to be acceptable. * There is generally a good structural variety in these stands although veteran trees may be under-represented because of past treatment and the unstable nature of some sites. * The ground flora may appear sparse, particularly where periodic flooding leaves areas of bare mud etc. Its composition may be variable (see attribute 5). * In coppiced stands a lower canopy cover (of standards) can be accepted. * See JNCC guidance note for the sorts of age structure likely to be appropriate for different types of management regime. * Dead wood is often abundant but because there tend to be fewer big trees the size of the fallen wood is often small. Flooding may lead to local accumulations with other areas totally lacking fallen wood. * Assess this attribute by field survey. * Where possible the hydrological regime should be allowed to revert to a more natural state.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		3.Regeneration potential	Successful establishment of young stems in gaps or on the edge of a stand	<ul style="list-style-type: none"> * Signs of seedlings growing through to saplings to young trees at sufficient density to maintain canopy density over a 10 yr period (or equivalent regrowth from coppice stumps). * No planting in stands. 	<ul style="list-style-type: none"> * A proportion of gaps at any one time may develop into permanent open space; equally some current permanent open space/glades may in time regenerate to closed canopy. * Regeneration may often occur on the edges of stands rather than in gaps within it. * In coppice most of the regeneration will be as stump regrowth. See JNCC Guidance Note on likely desirable levels of regeneration. * The minimum level of regeneration to be acceptable from a nature conservation viewpoint is likely to be much less than that needed where wood production is also an objective. * Assess this attribute by walking through the wood in spring/summer.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		4. Composition	<p>Cover of native versus non-native species (all layers)</p> <p>Death, destruction or replacement of native woodland species through effects of non-native fauna or external unnatural factors</p>	<p>* At least the current level of site-native species maintained.</p> <p>* At least 90% of cover in any one layer of site-native or acceptable naturalised species.</p> <p>* Death, destruction or replacement of native woodland species through effects of introduced fauna or other external unnatural factors not more than 10% by number or area in a five year period.</p>	<p>* In sites where there might be uncertainty as to what counts as site-native or as an acceptable naturalised species this must be made clear (eg the position of poplar).</p> <p>* Where cover in any one layer is less than 100% then the 90% target applies to the area actually covered by that layer.</p> <p>* Factors leading to the death or replacement of woodland species could include pollution, including eutrophication from adjacent farmland; new diseases (eg alder dieback).</p> <p>* Damage to species by non-native species that does not lead to their death or replacement by non woodland species (eg damage from squirrels to trees that non-the-less survive) is not necessarily unacceptable in nature conservation terms.</p> <p>* Excessive browsing/grazing by even native ungulates may be considered an unnatural external factor where it leads to undesirable shifts in the composition/structure of the stand, although this may be picked up by attributes 2 or 5 anyway.</p> <p>* Assess this attribute by a walk through the site.</p>

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		5. Species, habitats, structures characteristic of the site.	<p>Ground flora type</p> <p>Distinctive and desirable elements for a given site eg. locally uncommon species such as <i>Carex elata</i>; veteran trees or rich invertebrate assemblages.</p> <p>Patches of associated habitats and transitions eg to ash wood, open fen and open water</p>	<p>* 80% of ground flora cover referable to relevant NVC wet woodland community (W 2, 5, 6)</p> <p>* Distinctive elements maintained at current levels and in current locations (where appropriate).</p> <p>* Patches and transitions maintained in extent and where appropriate location.</p>	<p>* Changes leading to these targets not being met may be acceptable where this is due to natural processes.</p> <p>* Distinctive elements and patches should be marked on maps for ease of checking in the field wherever possible.</p> <p>* If there are species groups/assemblages that cannot be assessed directly on a general site visit then surrogate features should be given where possible, eg dead wood concentrations for associated invertebrates.</p>

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
22.12/44 Hard oligo-mesotrophic waters with benthic vegetation of <i>Chara</i> formations	Almost exclusively type '4' of the GB Standing Water Classification. Very rarely types '5' and '10'.	Extent of <i>Chara</i> beds.	Check extent of <i>Chara</i> beds in July on an annual basis.	Maintain type and extent of <i>Chara</i> vegetation which is optimal for the interest feature. No significant decrease from reference level. Reference level to be determined.	<p><i>Chara</i> community. <i>Chara</i> formations of various species. Endangered/Vulnerable/Rare species are <i>Chara intermedia</i>, <i>Chara baltica</i>, <i>Chara canescens</i>, <i>Chara rudis</i> and <i>Chara connivens</i>; and nationally scarce species are <i>Chara aspersa</i>, <i>Chara contraria</i>, <i>Chara pedunculata</i> and <i>Chara curta</i>. All are potentially components of a supporting community of <i>Myriophyllum spicatum</i>, <i>Potamogeton</i> species, <i>Callitriche</i> species and <i>Nymphaea alba/Nuphar lutea</i>. Lakes often fringed by <i>Phragmites australis</i>, <i>Typha angustifolia</i> and <i>Schoenoplectus lacustris</i>. Baseline survey should be carried out to determine present extent of <i>Chara</i> beds. Check for deterioration, extent of epiphytic growth on <i>Chara</i>. "Holes" in <i>Chara</i> beds should be monitored. <i>Elodea canadensis</i> should be absent. As <i>Chara</i> species are a colonising aspect of seral progression supporting macrophyte community may have to be managed to prevent seral progression.</p> <p>Extent will be variable according to site and can be variable according to seasonal changes In many cases <i>Chara</i> will be dominant feature.</p>

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Standing water, lakes.		Extent of supporting community including emergent vegetation.	Check community of associated macrophytes including, rare species, on an annual basis. Rare species include <i>Najas marina</i> . Maintain Chara and other species diversity.	Stable not expanding or contracting supporting community over 5 year period within limits of $\pm 10\%$ annually.	
		Water quality	Absence of filamentous algae and unicellular algal blooms. Establish Total P range by quarterly measurements over 3 year period, thereafter annually July/August.	For <i>Chara</i> lake $30 \mu\text{g l}^{-1}$ total phosphorus or below. Eutrophic conditions above $30 \mu\text{g l}^{-1}$ total phosphorus should not be prevalent.	Filamentous algae should be absent. The range of marl lakes exhibit a continuum of trophic condition from oligotrophy to low eutrophy. So the trophic condition for each marl lake type should be maintained. If filamentous algae present. Check for diffuse or point sources of pollution. Check Total P levels in aquifer if aquifer fed, check also that site not used for black-headed gull roosting or breeding. The target level should be set for individual SAC's and an acceptable range established. Increases in Total P level suggest need to move from annual July/August check back to more intensive quarterly samples to verify whether change is real.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		Sediment	Check condition of sediment and measure overall cover of marl every 10 years.	Marl production desirable, although this may be low or absent in oligotrophic hard waters. Some peat slumping acceptable, provided this is not induced due to land drainage.	Check immediate catchment area for drainage or land use change which might induce high sediment loads to enter system.
		Hydrology	Check water level in July annually.	Maintenance of stable water level desirable, although seasonal fluctuations expected.	Water level change downwards acceptable only in dry years. If lake level lowering due to outside water demands such as aquifer abstraction then counter measures need to be instigated.
22.13 Natural eutrophic lakes with Magnopotamion or Hydrocharition type vegetation.	NVC types: A3 A9 A13 A4 Types '7', '8', '9' and '10' of the GB Standing Water Classification.	Extent of community.	Check extent of beds in July/August every 4 years.	Extensive beds of submerged macrophytes should be present. Maintain mixed community.	Submerged vegetation characterised by broad leaved <i>Potamogeton</i> species such as <i>Potamogeton perfoliatus</i> , <i>P lucens</i> , <i>P crispus</i> , <i>P natans</i> , <i>P x salicilifolius</i> , <i>P coloratus</i> , <i>P polygonifolius</i> , <i>P gramineus</i> , <i>P. alpinus</i> and <i>Hydrocharition</i> type vegetation. <i>Hydrocharis morsus-ranae</i> is a very rare associate with the <i>Magnopotamion</i> in the UK. Its community components are present, however, mainly <i>Spirodela polyrhiza</i> , <i>Lemna minor</i> , <i>Hippuris vulgaris</i> , <i>Utricularia vulgaris</i> and <i>Apium inundatum</i> . Community should be mixed and no one species should be present above 40% level of total amount of macrophyte presence.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Standing water-Broads and ditch system		Extent of <i>Potamogeton</i> species <i>Magnopotamion</i> .	Check species presence in July/August every 4 years.	Maintain species presence of all <i>Magnopotamion</i> and fine leaved <i>Potamogetons</i> .	No one <i>Potamogeton</i> species should be present above 40% level of total amount or level of macrophyte presence (see Water Quality comment).
		Extent of nationally scarce or threatened species.	Establish population size and position of nationally scarce, rare or threatened species over a period of 3 years, on a quarterly basis; thereafter every two years in July/August.	Maintain presence of all nationally scarce, rare or threatened plant species.	Nationally scarce, rare or threatened species can vary in population size and extent due to temporal/seasonal changes in climate which affects physical variables such as water temperature.
		Water quality	Arrange for analysis of quarterly measurements of Total P for first three years; thereafter annually in July/August.	Maintain water quality particularly Total P levels. For southern systems 100 $\mu\text{g l}^{-1}$ or below, down to 65 $\mu\text{g l}^{-1}$.	The variable targets for Total P reflects the geographical range of this trophic state. The target for Total P should be set for individual SAC's and an acceptable range established. Increases in Total P suggest a need to move from annual July/August check, back to more intensive quarterly samples to verify whether change is real. Also check for cover shifts of macrophytes and dominant presence of pollution tolerant species above 40% level such as <i>Potamogeton pectinatus</i> , <i>Myriophyllum spicatum</i> and/or <i>Ceratophyllum demersum</i> .

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		Water quantity	Check lake levels during July/August.	Maintain hydrology of lake or ditch system.	Hydrology involves not only lake or ditch levels but flushing rates; prevent lowering or raising of lake or ditch level through modification of outfalls. With ditch systems aim for constant high water table throughout the year Water abstraction may represent a significant issue through the reduction of ground water and flushing flows into marginal ditch systems.
		Sediment	Check for excessive growths of individual macrophytes ie above 40%.	Maintain sediment quality and quantity.	Effects of increased macrophyte growth also relates to water quality; if this is at target levels, then enrichment of sediments is an issue if broad leaved <i>Potamogeton</i> species decline and fine leaved <i>Potamogeton pectinatus</i> increases above 40% level or <i>Myriophyllum spicatum</i> / <i>Ceratophyllum demersum</i> become dominant. Introduced fish and recreational use of site might through sediment disturbance move sites out of favourable condition. Check for increases in siltation from catchment use changes or changes in sewage treatment.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Lakes fens	Desmoulins whorl snail <i>Vertigo moulinsiana</i>	structure and composition of marginal vegetation	Length or area of stand of appropriate vegetation	The extent of suitable habitat should be maintained, compared to the extent on a baseline map, over appropriate lengths of river or area of fen or pool margin [area of fen or swamp, and number of sample stretches to be decided locally]. Suitable vegetation will be dense, unbroken stands of <i>Glyceria maxima</i> , <i>Carex riparia</i> , <i>C. acutiformis</i> , <i>C. paniculata</i> , <i>Cladium mariscus</i> and/or sparse <i>Phragmites</i> and <i>Phalaris arundinacea</i> .	It is expected that traditional and accepted river management will cause local deterioration of some stands but the aim is to ensure that habitat in appropriate condition is present at frequent intervals along a river corridor. The snail appears to be able to colonise new adjacent stands rapidly, and closely spaced, fragmented patches may provide acceptable conditions for this species. Habitat should be a suitable size and linked to rivers and waterways hydrologically and not separated by barriers such as mown paths.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Lakes fens		water table	1. depth below ground level; 2 & 3. vegetation indicators of drying out.	1. Water table must be close to the surface so that the ground remains squelchy all year, i.e. never drying out, so that, even in high summer, water will rise when the soil is trodden. Winter flooding is permissible. 2. Not more than 10% (occasional on the DAFOR scale) replacement of preferred dominant species by dense tall reed or by plants of drier conditions, e.g. <i>Urtica dioica</i> , <i>Epilobium hirsutum</i> , and low grasses invading the litter layer, within pre-selected stands (as selected for	<i>V. moulinsiana</i> requires highly humid conditions which are met by a high water table below the stands of vegetation in which it lives. Unfavourably wet conditions can result from prolonged flooding in summer or water penning being set too high. Current research (2000-01) will refine acceptable limits and measures for soil moisture. measuring extent). 3. Not more than 10% (occasional on the DAFOR scale) replacement of tall monocotyledons by plants preferring wetter conditions, e.g. <i>Rorippa nasturtium-aquaticum</i> , <i>Apium nodiflorum</i> and <i>Berula erecta</i> .
Lakes fens		vegetation height	height of bulk of the vegetation	Average height of the stands no less than 50 cm.	<i>V. moulinsiana</i> requires tall leaves on which it lives most of the year. Heavy grazing and mowing may be detrimental if it removes most taller clumps.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Lakes fens		shading by shrubs and trees (e.g. willow, alder)	proportion of habitat	Less than 10% increase in area of shade, compared to extent on the baseline map.	
Lakes fens		water quality	Biological class - Environment Agency's General Quality Assessment scheme. Assess every 5 years River Ecosystem Class. Assess against Environment Agency monitoring results. Suspended solids	>= 'b' In addition, no drop in class from exiting situation. >= RE3 In addition, no drop in class from exiting situation.	Although the snail lives out of the water, water quality may influence vegetation structure and perhaps the microflora living on the leaf surfaces where the snail feeds, and chemical quality may directly affect the snail when it is submerged during floods. Future experience and research may indicate that these variables are inapplicable to <i>V. moulinsiana</i> . No values are given for suspended solids as this pollutant has no direct influence on the condition of the habitat for <i>moulinsiana</i> . No monitoring targets are set for hardness but assessments for projects must take account of the snail's need for water whose hardness must not fall below value expected for the catchment.
River	Otter <i>Lutra lutra</i>	Water quality	EA scale	"Good", with no pollution incidents	Refer to Environment Agency for data
		Flow rate	Mean annual flow rate	No reduction attributable to increased abstraction.	Data from Environment Agency
		Site integrity	Total area	No reduction of fragmentation of area	

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		Fish stocks	EA assessment	Fish stocks appropriate to the nutrient status of the river No significant decline in fish biomass or species diversity	Refer to Environment Agency for sample data
		Disturbance	Extent of public access to river	No significant change to river or bankside usage; no significant development	
		Bankside cover	Proportion of bank lined with trees, scrub or other thick cover	No overall permanent decrease	Some change acceptable as long as it is appropriately mitigated
		Presence of otters	Signs of otters	Signs of otters found at least once per year	Use data from national or county surveys



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cSAC: Norfolk Valley Fens Component SSSI: Thompson Water, Carr and Common

Conservation objective for the European Interest on the SSSI

The conservation objectives for the European interests on the SSSI are:

to maintain*, in favourable condition, the:

- Alkaline fens
- Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno_Padion*, *Alnion incanae*, *Salicion alvae*)
- Calcareous fens with *Cladium mariscus* and species of the *Caricion davalliana*

to maintain*, in favourable condition, the habitats for the population of:

- Desmoulin's whorl snail (*Vertigo moulinsiana*)

* maintenance implies restoration if the feature is not currently in favourable condition.

The Conservation Objectives for Norfolk Valley Fens candidate Special Area of Conservation are, in accordance with para C10 of PPG 9, the reasons for which the cSAC was designated. The cSAC also includes land within Badley Moor, Dereham SSSI, Booton Common SSSI, Buxton Heath SSSI, Coston Fen, Runhall SSSI, East Walton and Adcock's Common SSSI, Flordon Common SSSI, Foulden Common SSSI, Great Cressingham Fen SSSI, Holt Lowes SSSI, Potter and Scarning Fens SSSI, Sheringham and Beeston Regis Common SSSI, Southrepps Common SSSI and Swangey Fen, Attleborough SSSI.

The favourable condition table will be used by English Nature to determine favourable condition and other relevant authorities to determine if a site is in favourable condition. Favourable condition is achieved when the targets set out below are met.

The favourable condition table should inform the scope and nature of any ‘appropriate assessment’ under the Habitats Regulations, but an appropriate assessment will also require consideration of issues specific to the individual plan or project. The favourable condition table does not by itself provide a comprehensive basis on which to assess plans or projects as required under Regulations 20-21, 24, 48-50 and 54-85. The scope and content of an appropriate assessment will depend upon the location, size and significance of the proposed project. English Nature will advise on a case by case basis.

Following an appropriate assessment, competent authorities are required to ascertain the effect on the integrity of the site. The integrity of the site is defined in para. C10 of PPG9 as ‘the coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified. The determination of favourable condition is separate from the judgement of effect upon integrity. For example, there may be a time lag between a plan or project being initiated and a consequent adverse effect upon integrity being manifest in the condition assessment. In such cases, a plan or project may have an adverse effect upon integrity even though the site remains in favourable condition.

Operational feature	Criteria feature	Attributes	Measures	Targets	Comments
Spring and seepage-fed	M9 bottle sedge <i>Carex rostrata</i>	Extent	Extent identified by Thompson Common NVC survey (Smart 1995).	Maintain as an absolute minimum baseline the	Extent of fen communities may be subject to some

chalk-rich alkaline valley fen	<i>Calliergion cuspidatum</i> mire		Area identified for restoration to open fen in Thompson Common Management Plan (dates?)	overall area and extent identified by Thompson Common NVC survey Smart (1995). Extend area of open fen into areas currently occupied by secondary woodland and scrub, as per Management Plan (dates?)	natural dynamic variation, in response to extensive grazing pressure.
		Water quantity and quality	High piezometric head and permanently high water table (allowing for natural seasonal fluctuations) The spring water has low fertility and is rich in base ions.	Summer water levels (July-September) to fall no more than 10 cm below the surface.	
		Vegetation structure	Presence of varied sward structure with full range of vegetation heights, from close cropped to tall and ungrazed. Includes varying degrees of tussock height. Always includes elements of short pioneer fen vegetation	At height of summer (July August), fen vegetation to be typically no more than 0.5 metres tall, with random mosaic of differing vegetation and tussock heights across whole fen area.	As with extent, likely to be influenced by grazing regime, with vegetation responding to variable grazing pressure over time.
Operational feature	Criteria feature	Attributes	Measures	Targets	Comments
		Vegetation composition	low growing carpets of sedges and mosses List A: <i>Carex rostrata</i> List B: <i>Carex disandra</i> <i>Epipactis heeleborine</i> <i>Juncus subnodulosus</i>	Low growing moss carpets to occupy between 10 and 30% of overall fen area. Both species in list A to be at least frequent. All species in list B to be at least occasional.	
		Negative indicators	<i>Phragmites australis</i>	Clumps of <i>Salix cinerea</i> to	

			<i>Urtica dioica</i> <i>Salix cinerea</i> <i>Epilobium hirsutum</i> <i>Eupatorium cannabinum</i> <i>Filipendula ulmaria</i>	occupy no more than 5% of the overall fen area. All other species listed to be no more than rare in the overall M13 fen area.	
Wet Alder Woodland	W5 alder - greater tussock sedge <i>Alnus glutinosa</i> - <i>Carex paniculata</i> wet woodland W6 alder - nettle <i>Alnus glutinosa</i> - <i>Urtica dioica</i> wet woodland	Area	Area identified by NVC survey (Norfolk Wildlife Trust 2001)	Maintain as a minimum baseline the area identified by the Norfolk Wildlife Trust NVC survey 2001.	
Operational feature	Criteria feature	Attributes	Measures	Targets	Comments
		Natural processes and structural development	Area of woodland allowed to function as non-intervention, and area restored as alder coppice. Veteran trees.	No less than 60% of the wet woodland area to be retained as non-intervention. Restore coppice management of up to 40% of the overall woodland area. Old veteran alder specimens to be at least 2 per hectare.	
		Regeneration	Density, strength and distribution of young alder regeneration throughout woodland area.	Areas of regenerating, dense, young alder saplings to occupy up to than 15% of the overall non-intervention area.	
		Composition	List A: <i>Alnus glutinosa</i>	<i>Alnus glutinosa</i> to be at least abundant in both W5	

			List B: <i>Urtica dioica</i> <i>Fraxinus excelsior</i> <i>Betula pubescens</i> <i>Salix cinerea</i>	and W6. Species in List B to be at least occasional but never more than frequent.	
Operational feature	Criteria feature	Attributes	Measures	Targets	Comments
		Quality indicators	Water table Dead wood	Ground to remain permanently wet and swampy all year round. Fallen dead wood to be present throughout the entire woodland area. Standing dead wood to be at least two dead trees per hectare across the overall woodland area.	
Stands of reed and tall herb fen rich in <i>Cladium mariscus</i>	S2 great fen sedge <i>Cladium mariscus</i> swamp	Extent	Extent identified by Thompson Common NVC survey (Smart 1995) Area identified for restoration to open fen in Thompson Common Management Plan overview 1996	Maintain as an absolute minimum baseline the extent and area identified by the Thompson Common NVC survey (Smart 1995). Extend the <i>Cladium</i> swamp communities into areas currently occupied by secondary scrub, which have been identified for restoration to in the Thompson Common Management Plan (1996)	
Operational	Criteria feature	Attributes	Measures	Targets	Comments

feature					
		Water quality and quantity	Base-rich, low fertility supply of groundwater. High piezometric head and permanently high water table (allowing for natural seasonal fluctuations)	No significant reduction in the flux of groundwater to these communities Allowing for natural seasonal variation, water table to drop no more than 20cm below ground level in summer.	These swamp communities can be adversely affected by excessive enrichment
		Vegetation structure	% cover of tall vegetation dominated by <i>Cladium mariscus</i> .	Tall <i>Cladium</i> dominated swamp, not less than 0.5 metres high, to occupy no less than 80% of the overall swamp area.	
		Vegetation composition	List A: <i>Cladium mariscus</i> <i>Phragmites australis</i> List B: <i>Hottonia palustris</i> <i>Mentha aquatica</i>	<i>Cladium mariscus</i> to be at least frequent. <i>Phragmites</i> to be at least occasional Species in List B to be at least occasional.	
		Negative indicators	encroaching <i>Salix cinerea</i> <i>Urtica dioica</i> <i>Rubus spp.</i>	Salix scrub to occupy no more than 10% of the overall swamp area	Encroaching negative species may indicate either drying out or insufficient management.
Operational feature	Criteria feature	Attributes	Measures	Targets	Comments
Rive s and Fens	<i>Vertigo moulinsiana</i>	Structure and composition of fen vegetation	Area of stand of appropriate vegetation.	Maintain as a minimum baseline the extent of suitable habitat , and geographic distribution of the snail withinthe site as shown by 2000/01 surevy.	The extent of suitable vegetation may change dynamically over time, in response to extensive grazing regimes.

Operational feature	Criteria feature	Attributes	Measures	Targets	Comments
		Water table	1. Depth below ground level 2 + 3. Signs of drying out on the vegetation	1. Water table close to the surface so ground remains squelchy, so that even in high summer, water comes to the surface when the soil is trodden. Winter flooding is allowed. 2. Not more than a 10%	<i>Vertigo moulinsiana</i> requires highly humid conditions which are met by a high water table below the stand of vegetation where it lives. Unfavourable wet conditions can result from prolonged flooding in summer or artificially 'ponding' the water up too high.

				<p>replacement of preferred species by tall reed or plants of dry conditions ie <i>Urtica dioica</i> and <i>Epilobium hirsutum</i>, and low grasses invading the litter layer.</p> <p>3. No more than a 10% replacement of tall monocotyledons by plants which prefer wetter conditions</p>	
Operational feature	Criteria feature	Attributes	Measures	Targets	Comments
		Vegetation height	height of the bulk of the vegetation in the stand.	Average height of the stand is no less than 50cm.	<i>Vertigo moulinsiana</i> requires tall leaves where it lives for most of the year. Heavy grazing or mowing may be detrimental if it removes most of the taller vegetation.
		Shade from scrub and trees	proportion of habitat covered in scrub and trees	No more than 10% increase in area of shade above baseline in year 2000.	



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pSPA: Breckland
cSAC: Breckland
Component SSSI: Thetford Heath

Conservation objective for the European Interest on the SSSI

The conservation objectives for the European interests on the SSSI are :

to maintain*, in favourable condition, the:

- Semi-natural dry grasslands and scrubland facies: on calcareous substrates (*Festuco-Brometalia*)
- European dry heaths

to maintain*, in favourable condition, the habitats for the populations of the Annex 1 bird species⁺, of European importance, with particular reference to:

- heathland
- acid grassland
- chalk grassland and/or inland dune communities

⁺ Woodlark, Nightjar, Stone Curlew

* maintenance implies restoration if the feature is not currently in favourable condition.

The Conservation Objectives for Breckland proposed Special Protection Area and Breckland candidate Special Area of Conservation are, in accordance with para C 10 of PPG 9, the reasons for which the pSPA was proposed and the SAC designated .

The Breckland cSAC and the Breckland pSPA include land within:

Barnhamcross Common SSSI	Gooderstone Warren SSSI
Berner's Heath, Icklingham SSSI	Grime's Graves SSSI
Bridgham and Brettenham Heaths SSSI	Lakenheath Warren SSSI
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Foxhole Heath, Eriswell SSSI	Weeting Heath SSSI

The Breckland cSAC also includes land within:

Maidencross Hill SSSI	RAF Lakenheath SSSI
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The Breckland pSPA also includes land within

Barnham Heath SSSI	Little Heath, Barnham SSSI
Beeches Pit, West Stow SSSI	Old Bodney Camp SSSI
Cranberry Rough, Hockham SSSI	Rex Graham Reserve SSSI
Eriswell Low Warren SSSI	Warren Hill SSSI
High Lodge, Mildenhall SSSI	West Stow Heath SSSI
How Hill Track SSSI	

The Favourable Condition Table will be used by English Nature and other relevant authorities to determine if a site is in favourable condition. Favourable condition is achieved when the targets given below are met.

The favourable condition table should inform the scope and nature of any 'appropriate assessment' under the Habitats Regulations, but an appropriate assessment will also require consideration of issues specific to the individual plan or project. The favourable condition table does not by itself provide a comprehensive basis on which to assess plans and projects as required under Regulations 20-21, 24, 48-50 and 54 - 85. The scope and content of an appropriate assessment will depend upon the location, size and significance of the proposed project. English Nature will advise on a case by case basis.

Following an appropriate assessment, competent authorities are required to ascertain the effect on the integrity of the site. The integrity of the site is defined in para C10 of PPG9 as the coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified. The determination of favourable condition is separate from the judgement of effect upon integrity. For example, there may be a time-lag between a plan or project being initiated and a consequent adverse effect upon integrity becoming manifest in the condition assessment. In such cases, a plan or project may have an adverse effect upon integrity even though the site remains in favourable condition.

Annual counts for qualifying bird species will be used by English Nature, in the context of five year peak means, together with available information on UK population and distribution trends, to assess whether the SPA is continuing to make an appropriate contribution to the Favourable Conservation Status of the species across Europe.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Dry heathland	H1	Extent	Total area (25.7ha of heathland/acid grassland mosaic) as mapped by Gibbons (1996). Measure every two years if it is possible. [In specific cases look if there is a radical difference between cSAC and SSSI baseline, in which case discuss with specialist.]	Maintain existing area and extent	This community is confined to base-poor and oligotrophic sandy soils in the more continental lowlands of Eastern England. Large areas have been lost or fragmented to agriculture and forestry in the past.
		Bare ground	'Natural' bare ground (mineral soil) in intimate mosaic within vegetation 'Recreation' heavily used paralleling paths	'Natural' between 10-25% 'Heavily disturbed' <1%	Bryophytes and lichens are more extensive and diverse among open covers of <i>Calluna</i> . Sandy profiles can be found in coastal and few inland dune systems, where there is, or has been, mobile sand.
		Vegetation Structure	Record percentage of cover of <i>Calluna vulgaris</i> in different stages of its life cycle.	Cover of <i>Calluna vulgaris</i> to be between 25% minimum and 90% maximum. Mosaic with >10% young and 30-50% mature / degenerate <i>Calluna vulgaris</i> within unit. < 25% <i>Ulex europaeus</i>	<i>Calluna vulgaris</i> is often the only woody species present. Its cover and height are very variable. Grasses, when they occur, are present as scattered tussocks. <i>Ulex europaeus</i> is uncommon and restricted to disturbed areas.
		Vegetation Composition	Record frequency of any of the following species when present: List A <i>Calluna vulgaris</i> List B <i>Agrostis capillaris</i> , <i>Festuca ovina</i> , <i>Deschampsia flexuosa</i>	All species from List A must be at least frequent. At least two species of list B are at least occasional	Associated flora is for the most part confined to areas between <i>Calluna</i> clumps and the centre of collapsing bushes.
		Negative indicators	Record frequency and percentage cover of any of the following species when present:	< 50 % cover degenerate/dead <i>Calluna vulgaris</i> No <i>Rhododendron ponticum</i>	<i>Rhododendron ponticum</i> and <i>Gaultheria shallon</i> can spread rapidly and have a negligible nature conservation value. Dense rhododendron casts deep shade which excludes

			<i>Pteridium aquilinum</i> <i>Rhododendron ponticum</i> <i>Rubus</i> spp. <i>Senecio</i> spp. <i>Urtica dioica</i> <i>Pinus</i> spp. <i>Betula</i> spp. <i>Quercus</i> spp. <i>Cirsium arvense</i> <i>Cirsium vulgare</i> <i>Deschampsia flexuosa</i>	<p>< 1 % <i>Rubus</i> spp., <i>Senecio</i> spp., <i>Urtica dioica</i>, <i>Cirsium</i> spp.</p> <p>< 5% trees, tree seedlings or other species of scrub.</p> <p>< 25% <i>Pteridium aquilinum</i></p> <p>< 25% <i>Deschampsia flexuosa</i></p>	<p>other vegetation.</p> <p>Scrub (shrubs, trees or tree seedlings) above 1 m in height is an important component of the heathland but its cover should be stable or not increasing as a whole.</p> <p>Management of bracken should be directed more to control than eradication.</p>
			Record presence of signs of overgrazing, e.g. carpet, topiary or drumstick heather forms	No presence of signs of overgrazing.	Although lowland heathlands tend to be more under-grazed than over-grazed, localized overgrazing may occur. Management may need to be modified to tackle these situations.
Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Unimproved calcareous grassland	CG2	*Extent	Total area (1.3ha), as mapped by Gibbons (1996), in period May-July.	No reduction in area and any consequent fragmentation without prior consent	Recoverable reduction = unfavourable; non-recoverable reduction = partially destroyed. Excludes bare ground associated with rabbit warrens (see below).
		*Sward composition: positive	Record the frequency of positive indicator species in period May- July. <i>Anthyllis vulneraria</i> , <i>Asperula</i>	At least four species/taxa frequent plus at least three species/taxa occasional	Choice of species related to NVC type and restriction to unimproved grassland, considered satisfactory when inside target. Among

		indicator species	<i>cynanchica</i> , <i>Campanula glomerata</i> , <i>Cirsium acaule</i> , <i>Filipendula vulgaris</i> , <i>Gentianella</i> spp., <i>Helianthemum nummularium</i> , <i>Hippocrepis comosa</i> , <i>Leontodon hispidus/L. saxatilis</i> , <i>Leucanthemum vulgare</i> , <i>Linum catharticum</i> , <i>Lotus corniculatus</i> , <i>Pilosella officinarum</i> (<i>Hieracium pilosella</i>), <i>Plantago media</i> , <i>Polygala</i> spp., <i>Primula veris</i> , <i>Sanguisorba minor</i> , <i>Scabiosa columbaria</i> , <i>Serratula tinctoria</i> , <i>Succisa pratensis</i> , <i>Thymus</i> spp.	throughout the sward.	possible species that could be used, choice further restricted by ease of identification, visibility in recording period.
		*Sward composition: grass/herb ratio	Proportion of non-Graminae (“herbs”), in period May -July.	40-90%	Low proportion outside target indicates eutrophication, usually from fertilisers, or insufficient removal of biomass, leading to dominance by grasses.
		*Sward composition: negative indicator species	Record % cover of <i>Brachypodium pinnatum</i> and <i>Bromopsis erecta</i> , in period May-July.	Neither species at more than 10% cover	Outside target indicates insufficient removal of biomass eg under-grazing.
		*Sward composition: negative indicator species	Record the frequency and % cover of negative indicator species. Record in period May-July. <i>Cirsium arvense</i> , <i>Cirsium vulgare</i> , <i>Rumex crispus</i> , <i>Rumex obtusifolius</i> , <i>Senecio jacobaea</i> , <i>Urtica dioica</i> .	No species/taxa more than occasional throughout the sward or singly or together more than 5% cover	Invasive species chosen to indicate problems of eutrophication and disturbance from various sources when outside target eg poaching, stock feeding.
		*Sward composition: negative indicator species	Record the frequency and % cover of all tree and scrub species excluding <i>Juniperus communis</i> , considered together, in period May-July. NB If scrub/tree species are more than occasional throughout the sward but less than 5% cover, they are soon likely to become a problem if grazing levels are not sufficient or if scrub control is not being carried out.	No more than 5% cover.	Invasive species outside target shows that habitat is not being managed sufficiently eg under-grazed.
		Sward structure: average height	Record sward height in period May-July.	Sward 2-10 cms.	Outside target indicates insufficient grazing or over-grazing.

		Sward structure: litter	Record cover of litter where in a more or less continuous layer, distributed either in patches or in one larger area, in period May-July.	Total extent no more than 25% of the sward	Outside target indicates biomass removal is insufficient eg under-grazed.
		Sward structure: bare ground	Record extent of bare ground (not rock) distributed through the sward, visible without disturbing the vegetation, in period May-July.	No more than 10% .	Outside target indicates management problems eg over-grazing.
		Sward structure: localized bare ground	Record extent of localized bare ground around rabbit warrens.	No more than 0.05 ha ie approximately 20x20 metres	Outside target indicates rabbit grazing and disturbance levels are too high.
Unimproved calcareous grassland	CG7a,b,d,e	*Extent	Total area (24.6ha), as mapped by Gibbons (1996), in period end April-mid July.	No reduction in area and any consequent fragmentation without prior consent	Recoverable reduction = unfavourable; non-recoverable reduction = partially destroyed. Excludes bare ground associated with rabbit warrens (see below). Note that besides 24.6ha of CG7b; there is an additional 5.0ha of CG7b/SD8b mosaic.
		*Sward composition: positive indicator species	Record the frequency of positive indicator species in period end April-mid July. <i>Aira</i> spp., <i>Aphanes</i> spp., <i>Astragalus danicus</i> , <i>Centaurium erythraea</i> , <i>Cladonia</i> spp, <i>Dianthus deltoides</i> , <i>Erigeron acer</i> , <i>Erodium cicutarium</i> , <i>Fragaria vesca</i> , <i>Galium verum</i> , <i>Helianthemum nummularium</i> , <i>Leontodon hispidus</i> /L. <i>saxatilis</i> , <i>Lotus corniculatus</i> , <i>Ornithopus perpusillus</i> , <i>Pilosella officinarum</i> (<i>Hieracium pilosella</i>), <i>Plantago coronopus</i> , <i>Rumex acetosella</i> , <i>Sedum acre</i> , <i>Teesdalia nudicaulis</i> , <i>Thymus</i> spp.	At least two species/taxa frequent and four species/taxa occasional throughout the sward	Choice of species related to NVC type and restriction to unimproved grassland, considered satisfactory when inside target. Among possible species that could be used, choice further restricted by ease of identification, visibility in recording period.
		*Sward composition: negative indicator species	Record the frequency and % cover of negative indicator species. Record in period end April-mid July.	No species/taxa more than occasional throughout the sward or singly or together more than 5% cover	Invasive species chosen to indicate problems of eutrophication and disturbance from various sources when outside target eg poaching, stock feeding.

			<i>Carduus nutans, Chamerion angustifolium, Cirsium arvense, Cirsium vulgare, Plantago major, Urtica dioica.</i>		
		*Sward composition: negative indicator species	Record the frequency and % cover of all tree and scrub species excluding <i>Juniperus communis</i> , considered together, in period end April-mid July. NB If scrub/tree species are more than occasional throughout the sward but less than 5% cover, they are soon likely to become a problem if grazing levels are not sufficient or if scrub control is not being carried out.	No more than 5% cover.	Invasive species outside target shows that habitat is not being managed sufficiently eg under-grazed.
		*Sward composition: negative indicator species	Record % cover of coarse grasses eg <i>Holcus lanatus, Dactylis glomerata</i> , in period end April-mid July.	No more than 10% cover	Invasive species chosen to indicate problems of eutrophication and insufficient removal of biomass eg under-grazing
		Sward composition: negative indicator species	Record frequency of <i>Senecio jacobaea</i> , in period end April-mid July.	No more than occasional throughout the sward	Frequency outside target indicates management problems eg over-grazing and trampling.
		Sward structure: average height	Record sward height in period end April-mid July.	Sward 5 cms or less	Outside target indicates insufficient grazing.
		Sward structure: litter	Record cover of litter where in a more or less continuous layer, distributed either in patches or in one larger area, in period end April-mid July.	Total extent no more than 25% of the sward	Outside target indicates biomass removal is insufficient eg under-grazed.
		Sward structure: bare ground	Record extent of bare ground (not rock) distributed through the sward, visible without disturbing the vegetation, in period end April-mid July.	No more than 15% .	Outside target indicates management problems eg over-grazing.
		Sward structure: localized bare ground	Record extent of localized bare ground around rabbit warrens.	No more than 0.25 ha ie approximately 50x50 metres	Heavy rabbit grazing usually associated with type but outside target indicates rabbit grazing and disturbance levels are too high.
Unimproved	CG7c	*Extent	Total area (1.3ha), as mapped by Gibbons	No reduction in area and any	Recoverable reduction = unfavourable; non-

calcareous grassland			(1996), in period end April-August.	consequent fragmentation without prior consent	recoverable reduction = partially destroyed.
		*Sward composition: lichen cover	Record % cover of bushy or plate-like lichens, which may encrust the soil surface, rocks, pebbles or acrocarpous (unbranched) bryophytes.	15-90%	Outside target indicates principal component of interest deteriorating eg from trampling damage, competition from vascular plants or bryophytes, or possibly the effects of atmospheric deposition.
		*Sward composition: presence of rare and scarce lichen species	Record identity and extent (abundance) of rare and scarce lichen species (specific to site). <i>Squamarina lentigera</i> <i>Buellia asterella</i>	Continued presence of rare and scarce species and no decline in extent (abundance) from baseline to be determined.	Rare and scarce lichens are important contributors to the interest feature. Decline may be due to a number of factors including atmospheric deposition and insufficient grazing.
		*Sward composition: negative indicator species	Record the frequency and % cover of negative indicator species. Record in period end April-August. <i>Carduus nutans, Chamerion angustifolium, Cirsium arvense, Cirsium vulgare, Plantago major, Pteridium aquilinum, Urtica dioica</i> , coarse grasses eg <i>Holcus lanatus</i> .	No species/taxa more than occasional throughout the sward or singly or together more than 5% cover	Invasive species chosen to indicate problems of eutrophication and disturbance from various sources when outside target eg poaching, stock feeding.
		*Sward composition: negative indicator species	Record the frequency and % cover of all tree and scrub species, considered together, in period end April-August. NB If scrub/tree species are more than occasional throughout the sward but less than 1% cover, they are soon likely to become a problem if grazing levels are not sufficient or if scrub control is not being carried out.	No more than 1% cover.	Invasive species outside target shows that habitat is not being managed sufficiently eg under-grazed.
		*Sward composition: negative	Record % cover of mat-like, branching (pleurocarpous) bryophytes.	No more than 50% cover	Outside target indicates competition from robust pleurocarpous bryophytes is a problem eg because of under-grazing or eutrophication.

		indicator species			
		Sward composition: negative indicator species	Record frequency of <i>Senecio jacobaea</i> , in period end April-August.	No more than occasional throughout the sward	Frequency outside target indicates management problems eg over-grazing and trampling.
		Sward structure: average height	Record sward height in period end April-August.	Sward 5 cms or less	Outside target indicates insufficient grazing.
		Sward structure: litter	Record cover of litter where in a more or less continuous layer, distributed either in patches or in one larger area, in period end April-August.	Total extent no more than 5% of the sward	Outside target indicates biomass removal is insufficient eg under-grazed.
		*Sward structure: bare ground	Record extent of bare ground distributed through the sward, visible without disturbing the vegetation. Includes flints, pebbles and tiny tufts of acrocarpous (unbranched) bryophytes. Measure in period end April-August.	10-50%	Inside target indicates open conditions required by lichens are available.
		Sward structure: rabbit grazing levels	Record frequency of rabbit droppings.	Rabbit droppings frequent throughout the sward.	Heavy rabbit grazing usually strongly associated with the habitat, creating conditions suitable for lichens.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
All habitats; heathland, acid grassland, chalk grassland and/or inland dune	Annex 1 populations of European importance: stone-curlew, nightjar,	Extent and distribution of habitat	Area, measured periodically (frequency to be determined)	No significant decrease from reference level.	Methodology for assessing target to be determined. Reference level to be determined.

communities	woodlark				
	Annex 1 populations of European importance: stone-curlew, nightjar, woodlark	Disturbance	Reduction or displacement of birds, measured periodically (frequency to be determined)	No significant reduction or displacement of birds attributable to human disturbance in relation to reference level.	Methodology for assessing target to be determined. Reference level to be determined.
	Annex 1 population of European importance: stone-curlew	Food availability -	Abundance of soil and dung invertebrates, measured periodically (frequency to be determined)	Presence and abundance of prey species should not deviate significantly from reference level	Including e.g. beetles, grasshoppers, flies, earthworms, snails, slugs. Methodology for assessing target to be determined. Reference level to be determined.
	Annex 1 population of European importance: nightjar	Food availability	Abundance of night-flying insects, measured periodically (frequency to be determined).	Presence and abundance of prey species should not deviate significantly from reference level.	Moths and beetles are important for nightjar. Methodology for assessing target to be determined. Reference level to be determined.
	Annex 1 population of European importance: woodlark	Food availability	Abundance of ground-surface invertebrates, measured periodically (frequency to be determined).	Presence and abundance of prey species should not deviate from reference level.	Including e.g. spiders, weevils, caterpillars. Methodology for assessing target to be determined. Reference level to be determined.
	Annex 1 population of European importance: stone-curlew	Vegetation characteristics	Extent and proportions of patches of at least half-hectare with vegetation less than 2cm high and at least 10% bare ground and unrestricted views over 200m, patches of medium height vegetation for roosting, measured periodically (frequency to be determined).	No significant decrease in extent and proportions of patches of at least half-hectare with vegetation less than 2cm high and at least 10% bare ground and unrestricted views over 200m, patches of medium height vegetation for roosting, measured periodically; from reference level.	Methodology for assessing target to be determined. Reference level to be determined.
	Annex 1 population of European importance:	Vegetation characteristics	open ground with low vegetation (feeding), and sparse woodland / scrub cover (feeding, roosting).	No significant decrease in extent and proportions of open ground with predominantly low vegetation	Nightjar require vegetation mostly 20-60cm high with less than 50% tree/scrub cover overall. Reference level to be determined.

	nightjar			(feeding), and sparse woodland / scrub cover (feeding, roosting) from reference level.	
	Annex 1 population of European importance: woodlark	Vegetation characteristics	Extent and proportions of mix of shrub / tree cover (display), short-medium vegetation and bare ground (feeding, roosting, nesting), measured periodically (frequency to be determined).	No significant decrease in extent and proportions of mix of shrub / tree cover (display), short-medium vegetation and bare ground (feeding, roosting, nesting).	Frequent bare patches under 0.5 ha within mosaic of short (under 5cm high) to medium (10-20cm high) ground vegetation, and small clumps of shrubs or trees. Methodology for assessing target to be determined. Reference level to be determined.

SLR/NS



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pSPA: Breckland
cSAC: Breckland
Component SSSI: Thetford Golf Course and Marsh

Conservation objective for the European Interest on the SSSI

The conservation objectives for the European interests on the SSSI are :

to maintain*, in favourable condition, the:

- Semi-natural dry grasslands and scrubland facies: on calcareous substrates (*Festuco-Brometalia*)
- European dry heath

to maintain*, in favourable condition, the habitats for the populations of the Annex 1 bird species⁺, of European importance, with particular reference to:

- heathland
- acid grassland
- chalk grassland and/or inland dune communities

⁺ Woodlark, Nightjar

* maintenance implies restoration if the feature is not currently in favourable condition.

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The Favourable Condition Table will be used by English Nature and other relevant authorities to determine if a site is in favourable condition. Favourable condition is achieved when the targets given below are met.

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Annual counts for qualifying bird species will be used by English Nature, in the context of five year peak means, together with available information on UK population and distribution trends, to assess whether the SPA is continuing to make an appropriate contribution to the Favourable Conservation Status of the species across Europe.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Dry heathland	H1	Extent	Total area (25.7ha of heathland/acid grassland mosaic) as mapped by Gibbons (1996). Measure every two years if it is possible. [In specific cases look if there is a radical difference between cSAC and SSSI baseline, in which case discuss with specialist.]	Maintain existing area and extent	This community is confined to base-poor and oligotrophic sandy soils in the more continental lowlands of Eastern England. Large areas have been lost or fragmented to agriculture and forestry in the past.
		Bare ground	'Natural' bare ground (mineral soil) in intimate mosaic within vegetation 'Recreation' heavily used paralleling paths	'Natural' between 10-25% 'Heavily disturbed' <1%	Bryophytes and lichens are more extensive and diverse among open covers of <i>Calluna</i> . Sandy profiles can be found in coastal and few inland dune systems, where there is, or has been, mobile sand.
		Vegetation Structure	Record percentage of cover of <i>Calluna vulgaris</i> in different stages of its life cycle.	Cover of <i>Calluna vulgaris</i> to be between 25% minimum and 90% maximum. Mosaic with >10% young and 30-50% mature / degenerate <i>Calluna vulgaris</i> within unit. < 25% <i>Ulex europaeus</i>	<i>Calluna vulgaris</i> is often the only woody species present. Its cover and height are very variable. Grasses, when they occur, are present as scattered tussocks. <i>Ulex europaeus</i> is uncommon and restricted to disturbed areas.
		Vegetation Composition	Record frequency of any of the following species when present: List A <i>Calluna vulgaris</i> List B <i>Agrostis capillaris</i> , <i>Festuca ovina</i> , <i>Deschampsia flexuosa</i>	All species from List A must be at least frequent. At least two species of list B are at least occasional	Associated flora is for the most part confined to areas between <i>Calluna</i> clumps and the centre of collapsing bushes.
		Negative indicators	Record frequency and percentage cover of any of the following species when present:	< 50 % cover degenerate/dead <i>Calluna vulgaris</i> No <i>Rhododendron ponticum</i>	<i>Rhododendron ponticum</i> and <i>Gaultheria shallon</i> can spread rapidly and have a negligible nature conservation value. Dense rhododendron casts deep shade which excludes

			<i>Pteridium aquilinum</i> <i>Rhododendron ponticum</i> <i>Rubus</i> spp. <i>Senecio</i> spp. <i>Urtica dioica</i> <i>Pinus</i> spp. <i>Betula</i> spp. <i>Quercus</i> spp. <i>Cirsium arvense</i> <i>Cirsium vulgare</i> <i>Deschampsia flexuosa</i>	<p>< 1 % <i>Rubus</i> spp., <i>Senecio</i> spp., <i>Urtica dioica</i>, <i>Cirsium</i> spp.</p> <p>< 5% trees, tree seedlings or other species of scrub.</p> <p>< 25% <i>Pteridium aquilinum</i></p> <p>< 25% <i>Deschampsia flexuosa</i></p>	<p>other vegetation.</p> <p>Scrub (shrubs, trees or tree seedlings) above 1 m in height is an important component of the heathland but its cover should be stable or not increasing as a whole.</p> <p>Management of bracken should be directed more to control than eradication.</p>
			Record presence of signs of overgrazing, e.g. carpet, topiary or drumstick heather forms	No presence of signs of overgrazing.	Although lowland heathlands tend to be more under-grazed than over-grazed, localized overgrazing may occur. Management may need to be modified to tackle these situations.
Unimproved calcareous grassland	CG2	*Extent	Total area (1.3ha), as mapped by Gibbons (1996), in period May-July.	No reduction in area and any consequent fragmentation without prior consent	Recoverable reduction = unfavourable; non-recoverable reduction = partially destroyed. Excludes bare ground associated with rabbit warrens (see below).
		*Sward composition: positive indicator species	Record the frequency of positive indicator species in period May- July. <i>Anthyllis vulneraria</i> , <i>Asperula cynanchica</i> , <i>Campanula glomerata</i> , <i>Cirsium acaule</i> , <i>Filipendula vulgaris</i> , <i>Gentianella</i> spp., <i>Helianthemum</i>	At least four species/taxa frequent plus at least three species/taxa occasional throughout the sward.	Choice of species related to NVC type and restriction to unimproved grassland, considered satisfactory when inside target. Among possible species that could be used, choice further restricted by ease of identification, visibility in recording period.

			<i>nummularium, Hippocrepis comosa, Leontodon hispidus/L. saxatilis, Leucanthemum vulgare, Linum catharticum, Lotus corniculatus, Pilosella officinarum (Hieracium pilosella), Plantago media, Polygala spp., Primula veris, Sanguisorba minor, Scabiosa columbaria, Serratula tinctoria, Succisa pratensis, Thymus spp.</i>		
		*Sward composition: grass/herb ratio	Proportion of non-Graminae (“herbs”), in period May -July.	40-90%	Low proportion outside target indicates eutrophication, usually from fertilisers, or insufficient removal of biomass, leading to dominance by grasses.
		*Sward composition: negative indicator species	Record % cover of <i>Brachypodium pinnatum</i> and <i>Bromopsis erecta</i> , in period May-July.	Neither species at more than 10% cover	Outside target indicates insufficient removal of biomass eg under-grazing.
		*Sward composition: negative indicator species	Record the frequency and % cover of negative indicator species. Record in period May-July. <i>Cirsium arvense, Cirsium vulgare, Rumex crispus, Rumex obtusifolius, Senecio jacobaea, Urtica dioica.</i>	No species/taxa more than occasional throughout the sward or singly or together more than 5% cover	Invasive species chosen to indicate problems of eutrophication and disturbance from various sources when outside target eg poaching, stock feeding.
		*Sward composition: negative indicator species	Record the frequency and % cover of all tree and scrub species excluding <i>Juniperus communis</i> , considered together, in period May-July. NB If scrub/tree species are more than occasional throughout the sward but less than 5% cover, they are soon likely to become a problem if grazing levels are not sufficient or if scrub control is not being carried out.	No more than 5% cover.	Invasive species outside target shows that habitat is not being managed sufficiently eg under-grazed.
		Sward structure: average height	Record sward height in period May-July.	Sward 2-10 cms.	Outside target indicates insufficient grazing or over-grazing.
		Sward structure: litter	Record cover of litter where in a more or less continuous layer, distributed either in patches or in one larger area, in period	Total extent no more than 25% of the sward	Outside target indicates biomass removal is insufficient eg under-grazed.

			May-July.		
		Sward structure: bare ground	Record extent of bare ground (not rock) distributed through the sward, visible without disturbing the vegetation, in period May-July.	No more than 10% .	Outside target indicates management problems eg over-grazing.
		Sward structure: localized bare ground	Record extent of localized bare ground around rabbit warrens.	No more than 0.05 ha ie approximately 20x20 metres	Outside target indicates rabbit grazing and disturbance levels are too high.
Unimproved calcareous grassland	CG7a,b,d,e	*Extent	Total area (24.6ha), as mapped by Gibbons (1996), in period end April-mid July.	No reduction in area and any consequent fragmentation without prior consent	Recoverable reduction = unfavourable; non-recoverable reduction = partially destroyed. Excludes bare ground associated with rabbit warrens (see below). Note that besides 24.6ha of CG7b; there is an additional 5.0ha of CG7b/SD8b mosaic.
		*Sward composition: positive indicator species	Record the frequency of positive indicator species in period end April-mid July. <i>Aira</i> spp., <i>Aphanes</i> spp., <i>Astragalus danicus</i> , <i>Centaurium erythraea</i> , <i>Cladonia</i> spp, <i>Dianthus deltoides</i> , <i>Erigeron acer</i> , <i>Erodium cicutarium</i> , <i>Fragaria vesca</i> , <i>Galium verum</i> , <i>Helianthemum nummularium</i> , <i>Leontodon hispidus</i> /L. <i>saxatilis</i> , <i>Lotus corniculatus</i> , <i>Ornithopus perpusillus</i> , <i>Pilosella officinarum</i> (<i>Hieracium pilosella</i>), <i>Plantago coronopus</i> , <i>Rumex acetosella</i> , <i>Sedum acre</i> , <i>Teesdalia nudicaulis</i> , <i>Thymus</i> spp.	At least two species/taxa frequent and four species/taxa occasional throughout the sward	Choice of species related to NVC type and restriction to unimproved grassland, considered satisfactory when inside target. Among possible species that could be used, choice further restricted by ease of identification, visibility in recording period.
		*Sward composition: negative indicator species	Record the frequency and % cover of negative indicator species. Record in period end April-mid July. <i>Carduus nutans</i> , <i>Chamerion angustifolium</i> , <i>Cirsium arvense</i> , <i>Cirsium vulgare</i> , <i>Plantago major</i> , <i>Urtica dioica</i> .	No species/taxa more than occasional throughout the sward or singly or together more than 5% cover	Invasive species chosen to indicate problems of eutrophication and disturbance from various sources when outside target eg poaching, stock feeding.

		*Sward composition: negative indicator species	Record the frequency and % cover of all tree and scrub species excluding <i>Juniperus communis</i> , considered together, in period end April-mid July. NB If scrub/tree species are more than occasional throughout the sward but less than 5% cover, they are soon likely to become a problem if grazing levels are not sufficient or if scrub control is not being carried out.	No more than 5% cover.	Invasive species outside target shows that habitat is not being managed sufficiently eg under-grazed.
		*Sward composition: negative indicator species	Record % cover of coarse grasses eg <i>Holcus lanatus</i> , <i>Dactylis glomerata</i> , in period end April-mid July.	No more than 10% cover	Invasive species chosen to indicate problems of eutrophication and insufficient removal of biomass eg under-grazing
		Sward composition: negative indicator species	Record frequency of <i>Senecio jacobaea</i> , in period end April-mid July.	No more than occasional throughout the sward	Frequency outside target indicates management problems eg over-grazing and trampling.
		Sward structure: average height	Record sward height in period end April-mid July.	Sward 5 cms or less	Outside target indicates insufficient grazing.
		Sward structure: litter	Record cover of litter where in a more or less continuous layer, distributed either in patches or in one larger area, in period end April-mid July.	Total extent no more than 25% of the sward	Outside target indicates biomass removal is insufficient eg under-grazed.
		Sward structure: bare ground	Record extent of bare ground (not rock) distributed through the sward, visible without disturbing the vegetation, in period end April-mid July.	No more than 15% .	Outside target indicates management problems eg over-grazing.
		Sward structure: localized bare ground	Record extent of localized bare ground around rabbit warrens.	No more than 0.25 ha ie approximately 50x50 metres	Heavy rabbit grazing usually associated with type but outside target indicates rabbit grazing and disturbance levels are too high.
Unimproved calcareous grassland	CG7c	*Extent	Total area (1.3ha), as mapped by Gibbons (1996), in period end April-August.	No reduction in area and any consequent fragmentation without prior consent	Recoverable reduction = unfavourable; non-recoverable reduction = partially destroyed.
		*Sward	Record % cover of bushy or plate-like	15-90%	Outside target indicates principal component of

		composition: lichen cover	lichens, which may encrust the soil surface, rocks, pebbles or acrocarpous (unbranched) bryophytes.		interest deteriorating eg from trampling damage, competition from vascular plants or bryophytes, or possibly the effects of atmospheric deposition.
		*Sward composition: presence of rare and scarce lichen species	Record identity and extent (abundance) of rare and scarce lichen species (specific to site). <i>Squamarina lentigera</i> <i>Buellia asterella</i>	Continued presence of rare and scarce species and no decline in extent (abundance) from baseline to be determined.	Rare and scarce lichens are important contributors to the interest feature. Decline may be due to a number of factors including atmospheric deposition and insufficient grazing.
		*Sward composition: negative indicator species	Record the frequency and % cover of negative indicator species. Record in period end April-August. <i>Carduus nutans, Chamerion angustifolium, Cirsium arvense, Cirsium vulgare, Plantago major, Pteridium aquilinum, Urtica dioica</i> , coarse grasses eg <i>Holcus lanatus</i> .	No species/taxa more than occasional throughout the sward or singly or together more than 5% cover	Invasive species chosen to indicate problems of eutrophication and disturbance from various sources when outside target eg poaching, stock feeding.
		*Sward composition: negative indicator species	Record the frequency and % cover of all tree and scrub species, considered together, in period end April-August. NB If scrub/tree species are more than occasional throughout the sward but less than 1% cover, they are soon likely to become a problem if grazing levels are not sufficient or if scrub control is not being carried out.	No more than 1% cover.	Invasive species outside target shows that habitat is not being managed sufficiently eg under-grazed.
		*Sward composition: negative indicator species	Record % cover of mat-like, branching (pleurocarpous) bryophytes.	No more than 50% cover	Outside target indicates competition from robust pleurocarpous bryophytes is a problem eg because of under-grazing or eutrophication.
		Sward composition:	Record frequency of <i>Senecio jacobaea</i> , in period end April-August.	No more than occasional throughout the sward	Frequency outside target indicates management problems eg over-grazing and

		negative indicator species			trampling.
		Sward structure: average height	Record sward height in period end April-August.	Sward 5 cms or less	Outside target indicates insufficient grazing.
		Sward structure: litter	Record cover of litter where in a more or less continuous layer, distributed either in patches or in one larger area, in period end April-August.	Total extent no more than 5% of the sward	Outside target indicates biomass removal is insufficient eg under-grazed.
		*Sward structure: bare ground	Record extent of bare ground distributed through the sward, visible without disturbing the vegetation. Includes flints, pebbles and tiny tufts of acrocarpous (unbranched) bryophytes. Measure in period end April-August.	10-50%	Inside target indicates open conditions required by lichens are available.
		Sward structure: rabbit grazing levels	Record frequency of rabbit droppings.	Rabbit droppings frequent throughout the sward.	Heavy rabbit grazing usually strongly associated with the habitat, creating conditions suitable for lichens.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
All habitats; heathland, acid grassland, chalk grassland and/or inland dune communities	Annex 1 populations of European importance: nightjar, woodlark	Extent and distribution of habitat	Area, measured periodically (frequency to be determined)	No significant decrease from reference level.	Methodology for assessing target to be determined. Reference level to be determined.
	Annex 1 populations of European importance: nightjar, woodlark	Disturbance	Reduction or displacement of birds, measured periodically (frequency to be determined)	No significant reduction or displacement of birds attributable to human disturbance in relation to reference level.	Methodology for assessing target to be determined. Reference level to be determined.
	Annex 1 population of European importance:	Food availability	Abundance of night-flying insects, measured periodically (frequency to be determined).	Presence and abundance of prey species should not deviate significantly from reference level.	Moths and beetles are important for nightjar. Methodology for assessing target to be

	nightjar				determined. Reference level to be determined.
	Annex 1 population of European importance: woodlark	Food availability	Abundance of ground-surface invertebrates, measured periodically (frequency to be determined).	Presence and abundance of prey species should not deviate from reference level.	Including e.g. spiders, weevils, caterpillars. Methodology for assessing target to be determined. Reference level to be determined.
	Annex 1 population of European importance: nightjar	Vegetation characteristics	Extent and proportions of open ground with predominantly low vegetation (feeding), bare patches (nesting), and sparse woodland / scrub cover (feeding, roosting) measured periodically (frequency to be determined).	No significant decrease in extent and proportions of open ground with predominantly low vegetation (feeding), bare patches (nesting), and sparse woodland / scrub cover (feeding, roosting) from reference level.	Nightjar require vegetation mostly of 20-60cm with frequent bare patches greater than 2m ² , 10-20% bare ground (nesting) and less than 50% tree/scrub cover overall Reference level to be determined
	Annex 1 population of European importance: woodlark	Vegetation characteristics	Extent and proportions of mix of shrub / tree cover (display), short-medium vegetation and bare ground (feeding, roosting, nesting), measured periodically (frequency to be determined).	No significant decrease in extent and proportions of mix of shrub / tree cover (display), short-medium vegetation and bare ground (feeding, roosting, nesting).	Frequent bare patches under 0.5 ha within mosaic of short (under 5cm high) to medium (10-20cm high) ground vegetation, and small clumps of shrubs or trees. Methodology for assessing target to be determined. Reference level to be determined.

SLR/NS



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cSAC: Norfolk Valley Fens
Component SSSI: Swangey Fen, Attleborough

Conservation objective for the European Interest on the SSSI

The conservation objectives for the European interests on the SSSI are:

to maintain*, in favourable condition, the:

- Alkaline fens

* maintenance implies restoration if the feature is not currently in favourable condition.

The Conservation Objectives for Norfolk Valley Fens candidate Special Area of Conservation are, in accordance with para C10 of PPG 9, the reasons for which the cSAC was designated. The cSAC also includes land within Badley Moor, Dereham SSSI, Booton Common SSSI, Buxton Heath SSSI, Coston Fen, Runhall SSSI, East Walton and Adcock's Common SSSI, Flordon Common SSSI, Foulden Common SSSI, Great Cressingham Fen SSSI, Holt Lowes SSSI, Potter and Scarning Fens SSSI, Sheringham and Beeston Regis Common SSSI, Southrepps Common SSSI, and Thompson Water, Carr and Common SSSI.

The favourable condition table will be used by English Nature to determine favourable condition and other relevant authorities to determine if a site is in favourable condition. Favourable condition is achieved when the targets set out below are met.

The favourable condition table should inform the scope and nature of any ‘appropriate assessment’ under the Habitats Regulations, but an appropriate assessment will also require consideration of issues specific to the individual plan or project. The favourable condition table does not by itself provide a comprehensive basis on which to assess plans or projects as required under Regulations 20-21, 24, 48-50 and 54-85. The scope and content of an appropriate assessment will depend upon the location, size and significance of the proposed project. English Nature will advise on a case by case basis.

Following an appropriate assessment, competent authorities are required to ascertain the effect on the integrity of the site. The integrity of the site is defined in para. C10 of PPG9 as ‘the coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified. The determination of favourable condition is separate from the judgement of effect upon integrity. For example, there may be a time lag between a plan or project being initiated and a consequent adverse effect upon integrity being manifest in the condition assessment. In such cases, a plan or project may have an adverse effect upon integrity even though the site remains in favourable condition.

Operational	Criteria feature	Attributes	Measures	Targets	Comments
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feature					
Spring and seepage-fed chalk-rich alkaline valley fen	M13 black bog rush - blunt flowered rush <i>Schoenus nigricans</i> - <i>Juncus subnodulosus</i> fen.	Extent	Extent identified by the Norfolk Valley Fen NVC survey (Smart 1992-93)	Maintain as an absolute minimum baseline the overall area and extent identified by Smart (1992-93).	Extent of fen communities may be subject to some natural dynamic variation, in response to mowing or other management regimes.
		Water quantity and quality	High piezometric head and permanently high water table (allowing for natural seasonal fluctuations) The spring water has low fertility and is rich in base ions.	Summer water levels (July-September) to fall no more than 10 cm below the surface.	
		Vegetation structure	Presence of varied sward structure with full range of vegetation heights, from close cropped to tall and ungrazed. Includes varying degrees of tussock height. Always includes elements of short pioneer fen vegetation	At height of summer (July August), fen vegetation to be typically no more than 0.5 metres tall, with random mosaic of differing vegetation and tussock heights across whole fen area.	As with extent, likely to be influenced by the management regime over time.
		Vegetation composition	Brown moss <i>Sphagnum spp.</i> carpets List A: <i>Schoenus nigricans</i> <i>Juncus subnodulosus</i>	Low growing brown moss carpets to occupy between 5 and 15% of overall fen area. Both species in list A to be at least frequent.	
		Negative indicators	<i>Phragmites australis</i> <i>Urtica dioica</i> <i>Salix cinerea</i> <i>Epilobium hirsutum</i> <i>Eupatorium cannabinum</i> <i>Fillipendula ulmaria</i>	Clumps of <i>Salix cinerea</i> to occupy no more than 5% of the overall fen area. All other species listed to be no more than rare in the overall M13 fen area.	



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pSPA: Breckland
cSAC: Breckland
Component SSSI: Stanford Training Area

Conservation objective for the European Interest on the SSSI

The conservation objectives for the European interests on the SSSI are :

to maintain*, in favourable condition, the

- Natural eutrophic lakes with *Magnopotamion* or *Hydrocharition* type vegetation
- European dry heaths
- Semi-natural dry grasslands and scrubland facies: on calcareous substrates (*Festuco-Brometalia*)
- Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion*, *Alnion incanae*, *Salicion alvae*)

to maintain*, in favourable condition, the habitats for the population of :

- Great-crested newts (*Triturus cristatus*)

to maintain*, in favourable condition, the habitats for the populations of the Annex 1 species⁺, of European importance, with particular reference to

- heathland
- acid grassland
- chalk grassland and/or inland dune communities

⁺ Stone curlew, Woodlark, Nightjar

* maintenance implies restoration if the feature is not currently in favourable condition.

The Conservation Objectives for Breckland proposed Special Protection Area and Breckland candidate Special Area of Conservation are, in accordance with para C 10

The Breckland cSAC and the Breckland pSPA include land within:

Barnhamcross Common SSSI	Gooderstone Warren SSSI
Berner's Heath, Icklingham SSSI	Grime's Graves SSSI
Bridgham and Brettenham Heaths SSSI	Lakenheath Warren SSSI
Cavenham - Icklingham Heaths SSSI	Stanford Training Area SSSI
Cranwich Camp SSSI	Thetford Golf Course and Marsh SSSI
Deadman's Grave, Icklingham SSSI	Thetford Heath SSSI
East Wretham Heath SSSI	Wangford Warren and Carr SSSI
Field Barn Heaths, Hilborough SSSI	Weather and Horn Heaths SSSI
Foxhole Heath, Eriswell SSSI	Weeting Heath SSSI

The Breckland cSAC also includes land within:

Maidencross Hill SSSI	RAF Lakenheath SSSI
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The Breckland pSPA also includes land within

Barnham Heath SSSI	Little Heath, Barnham SSSI
Beeches Pit, West Stow SSSI	Old Bodney Camp SSSI
Cranberry Rough, Hockham SSSI	Rex Graham Reserve SSSI
Eriswell Low Warren SSSI	Warren Hill SSSI
High Lodge, Mildenhall SSSI	West Stow Heath SSSI
How Hill Track SSSI	

Favourable Condition Table for Stanford Training Area SSSI

The Favourable Condition Table will be used by English Nature and other relevant authorities to determine if a site is in favourable condition. Favourable condition is achieved when the targets given below are met.

The favourable condition table should inform the scope and nature of any ‘appropriate assessment’ under the Habitats Regulations, but an appropriate assessment will also require consideration of issues specific to the individual plan or project. The favourable condition table does not by itself provide a comprehensive basis on which to assess plans and projects as required under Regulations 20-21, 24, 48-50 and 54 - 85. The scope and content of an appropriate assessment will depend upon the location, size and significance of the proposed project. English Nature will advise on a case by case basis.

Following an appropriate assessment, competent authorities are required to ascertain the effect on the integrity of the site. The integrity of the site is defined in para C10 of PPG9 as the coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified. The determination of favourable condition is separate from the judgement of effect upon integrity. For example, there may be a time-lag between a plan or project being initiated and a consequent adverse effect upon integrity becoming manifest in the condition assessment. In such cases, a plan or project may have an adverse effect upon integrity even though the site remains in favourable condition.

Annual counts for qualifying bird species will be used by English Nature, in the context of five year peak means, together with available information on UK population and distribution trends, to assess whether the SPA is continuing to make an appropriate contribution to the Favourable Conservation Status of the species across Europe.

Operational feature	Criteria features	Attributes	Measure	Target	Comments
Standing water	22.13 Natural eutrophic lakes with Magnopotamion or Hydrocharition type vegetation. Subset: Fluctuating	Extent of community.	Plant Community Check extent of macrophytes as percentage cover and species composition in selected bays and transects using 2000 survey results in July/August every 4 years.	Extensive beds of submerged macrophytes should be present. Maintain mixed community. There should be no loss of species representative of Criteria Features using	The general community is defined as submerged vegetation characterised by broad leaved <i>Potamogeton</i> species such as <i>Potamogeton perfoliatus</i> , <i>P. lucens</i> , <i>P. crispus</i> , <i>P. natans</i> , <i>P. praelongus</i> and <i>Hydrocharition</i> type vegetation. <i>Hydrocharis morsus-ranae</i> is a very rare associate with the <i>Magnopotamion</i> in the UK. The fluctuating meres support a very specialised <i>Magnopotamion</i> community. The main species are <i>Potamogeton gramineus</i> , <i>Potamogeton lucens</i> and the hybrid <i>P. zizzi</i> . A co-associate, often at dominant levels, is <i>Phalaris arundinacea</i>

	Meres.			the survey of 2000	Supporting species are <i>Myriophyllum spicatum</i> , <i>Ceratophyllum demersum</i> and <i>Ranunculus aquatilis</i> . Not all meres contain these species and in some only <i>P. lucens</i> and <i>Phalaris arundinacea</i> may be present. The seasonality of recharge is critical in determining species distribution which centres critically on the growth of <i>P. arundinacea</i> . This normally grows at the margins of water bodies at most is a shallow water species growing to depths of 0.3 metres only. If the mere is dry in the winter and water levels rise in the spring <i>P. arundinacea</i> growth matches the water level and atypically grows up to a depth of 2 metres when decay sets in. The dominance or decay of this species appears to exclude the growth of <i>Potamogeton spp.</i> which are forced to grow around the margins. Lowering of water tables in the mere clearly dries out the edge species first. If water levels rise in the winter beyond 0.3metres total average depth then <i>Potamogeton</i> species are favoured again over the shallow water species <i>P. arundinacea</i> . If water levels in the winter only rise to 0.3 metre total average depth <i>P. arundinacea</i> can grow in the spring but <i>Potamogetons</i> could already be growing and dependent on further rapid rises co-compete with <i>P. arundinacea</i> . potentially forming a mixed community. If the rise in water level is slow then <i>P.arundinacea</i> could out-compete <i>Potamogeton spp.</i> Another factor determining the distribution of these species is once <i>P. arundinacea</i> has grown in the centre of a mere over several years <i>Potamogeton</i> turions may be absent. Thus rather than an overgrowth of <i>Potamogeton</i> species in the centre in the first year it could take several years of high winter levels for these species to spread into the centre. Opportunistic species such as <i>Ceratophyllum demersum</i> are likely to fill the niche. From all this the conclusion is that it is desirable that, where possible, winter levels are kept constantly at 0.5metre or more and allowed to rise to the maximum natural extent in the summer thus favouring the SAC Community Criteria.
		Extent of <i>Potamogeton</i> species <i>Magnopotamio</i>	Check species presence in July/August every 4 years	Maintain species presence of all <i>Magnopotamion</i> and fine leaved	Occasionally sites will be dry due to low rainfall and groundwater recharge. The period for checking would therefore be affected.

		<i>n.</i>		<i>Potamogetons.</i>	
		Community characteristics - negative indicators 1) invasive aquatics 2)scrub invasion	1)Visual check for harmful alien species in July/August every 4 years. 2)Check extent of scrub every 4 years	1)No invasive alien species present 2)No more than 5% of the bowl of each mere should support tree/scrub vegetation	1)The floristic composition and characteristic communities of the meres would be harmed by the presence of invasive alien plant species e.g. <i>Crassula helmsii</i> 2)Natural encroachment of woodland may create excessive shading and enrichment through the input of leaf litter where grazing is absent or does not suppress establishment.
		Extent of nationally scarce or threatened species.	Establish population size and position of nationally rare species over a period of 3 years. Thereafter check presence in July/August every 2 years.	Maintain presence of all nationally scarce or threatened species.	Nationally scarce or threatened species will vary in population size and extent due to temporal/seasonal changes in climate which will affect water levels. In some years they may be absent. The recent (2000) survey could not find any nationally scarce or threatened aquatic species associated with the Community Criteria.
		Water quality	Establish limits of Total P. Arrange for analysis of monthly measurements of Total P for first three years to establish a baseline, thereafter quarterly	Maintain water quality particularly Total P levels. Target 100 $\mu\text{g l}^{-1}$ or below down to 40 $\mu\text{g l}^{-1}$.	The target level for Total P should be set for individual sites within the SAC. As sites are aquifer fed any pollution will be difficult to address. Check obvious source of potential pollution from land use to sewage sources.
		Water quantity	Check lake levels during July/August.	Maintain hydrology of lake system to as near-natural a fluctuating state.	A near-natural fluctuation in water levels at each mere must be maintained with, typically, annual rising mere levels in summer and falling levels in winter in varying lagged response to recharge and infiltration rates, superimposed on occasional dry periods in response to longer term patterns of climate.Except in naturally dry years all meres should have water in them with winter levels at a recommended minimum of 0.5 metre. (See comment above) Any artificial drawdowns should be restricted such that the period and frequency of drying of any mere is not significantly increased over those conditions which occurred in the 20th century before significant groundwater abstraction began around 1970. The limit to artificial drawdown must maintain, covered in water, the deep and shallow water species which comprise the vegetation present at each mere. Additionally, artificial drawdown must not exceed a value which may lead to a failure of a mere to re-wet in summer at the end of a naturally dry period or delay that re-wetting by one month or more. This should be defined for each mere in the

					<p>light of ongoing detailed hydrological monitoring and modelling and a cessation point to abstraction agreed on a site basis to protect the criteria features.</p> <p>The invertebrates and lower plants associated with the <i>Magnopotamion</i> vegetation should be conserved by maintaining near-natural fluctuating regime.</p>
		Sediment	Check for excessive growths of pollution tolerant species.	Maintain sediment quality and quantity.	Increased growth of pollution-tolerant macrophytes, relates to water quality; if this is at or above target levels, then enrichment of sediments is an issue. This may relate to waterfowl numbers and land use, check for any pollution sources.

Operational feature	Criteria features	Attributes	Measure	Target	Comment
Dry heathland	H1	Extent	Total area (approx. 88ha) as mapped by Sampson (1990). Measure every two years if it is possible.[In specific cases see if there is a radical difference between cSAC and SSSI baseline, in which case discuss with specialist.]	Maintain existing area and extent	This community is confined to base-poor and oligotrophic sandy soils in the more continental lowlands of Eastern England. Large areas have been lost or fragmented to agriculture and forestry in the past.
		Bare ground	'Natural' bare ground (mineral soil) in intimate mosaic within vegetation 'Recreation' heavily used paralleling paths	'Natural' between 10-25% 'Heavily disturbed' <1%	Bryophytes and lichens are more extensive and diverse among open covers of <i>Calluna</i> . [Sandy profiles can be found in coastal and few inland dune systems, where there is, or has been, mobile sand.
		Vegetation Structure	Record percentage of cover of <i>Calluna vulgaris</i> in different stages of its life cycle.	Cover of <i>Calluna vulgaris</i> to be between 25% minimum and 90% maximum. Mosaic with >10% young and 30-50% mature / degenerate <i>Calluna vulgaris</i> within unit. < 25% <i>Ulex europaeus</i>	<i>Calluna vulgaris</i> is often the only woody species present. Its cover and height are very variable. Grasses, when they occur, are present as scattered tussocks. <i>Ulex europaeus</i> is uncommon and restricted to disturbed areas.
		Vegetation Composition	Record frequency of any of the following species when present:	All species from List A must be at least	Associated flora is for the most part confined to areas between <i>Calluna</i> clumps and the centre of collapsing bushes.

			List A <i>Calluna vulgaris</i> List B <i>Agrostis capillaris, Festuca ovina, Deschampsia flexuosa</i>	frequent. At least two species of list B are at least occasional	
		Negative indicators	Record frequency and percentage cover of any of the following species when present: <i>Pteridium aquilinum</i> <i>Rhododendron ponticum</i> <i>Rubus</i> spp. <i>Senecio</i> spp. <i>Urtica dioica</i> <i>Pinus</i> spp. <i>Betula</i> spp. <i>Quercus</i> spp. <i>Cirsium arvense</i> <i>Cirsium vulgare</i> <i>Deschampsia flexuosa</i>	< 50 % cover degenerate/dead <i>Calluna vulgaris</i> No <i>Rhododendron ponticum</i> < 1 % <i>Rubus</i> spp., <i>Senecio</i> spp., <i>Urtica dioica</i> , <i>Cirsium</i> spp. < 5% trees, tree seedlings or other species of scrub. < 25% <i>Pteridium aquilinum</i> < 25% <i>Deschampsia flexuosa</i>	<i>Rhododendron ponticum</i> and <i>Gaultheria shallon</i> can spread rapidly and have a negligible nature conservation value. Dense rhododendron casts deep shade which excludes other vegetation. Scrub (shrubs, trees or tree seedlings) above 1 m in height is an important component of the heathland but its cover should be stable or not increasing as a whole. Management of bracken should be directed more to control than eradication.
			Record presence of signs of overgrazing, e.g. carpet, topiary or drumstick heather forms	No presence of signs of overgrazing.	Although lowland heathlands tend to be more under-grazed than over-grazed, localized overgrazing may occur. Management may need to be modified to tackle these situations.

Operational feature	Criteria features	Attributes	Measure	Target	Comment
Unimproved calcareous	CG2	*Extent	Total area, as mapped by Sampson (1990) , in period May-July.	No reduction in area and any consequent	Recoverable reduction = unfavourable; non-recoverable reduction = partially destroyed. Excludes bare ground associated with rabbit

grassland				fragmentation without prior consent	warrens (see below)
		*Sward composition: positive indicator species	Record the frequency of positive indicator species in period May- July. <i>Anthyllis vulneraria, Asperula cynanchica, Campanula glomerata, Cirsium acaule, Filipendula vulgaris, Gentianella spp., Helianthemum nummularium, Hippocrepis comosa, Leontodon hispidus/L. saxatilis, Leucanthemum vulgare, Linum catharticum, Lotus corniculatus, Pilosella officinarum (Hieracium pilosella), Plantago media, Polygala spp., Primula veris, Sanguisorba minor, Scabiosa columbaria, Serratula tinctoria, Succisa pratensis, Thymus spp.</i>	At least four species/taxa frequent plus at least three species/taxa occasional throughout the sward.	Choice of species related to NVC type and restriction to unimproved grassland, considered satisfactory when inside target. Among possible species that could be used, choice further restricted by ease of identification, visibility in recording period.
		*Sward composition: grass/herb ratio	Proportion of non-Graminae (“herbs”), in period May -July.	40-90%	Low proportion outside target indicates eutrophication, usually from fertilisers, or insufficient removal of biomass, leading to dominance by grasses.
		*Sward composition: negative indicator species	Record % cover of <i>Brachypodium pinnatum</i> and <i>Bromopsis erecta</i> , in period May-July.	Neither species at more than 10% cover	Outside target indicates insufficient removal of biomass eg under-grazing.
		*Sward composition: negative indicator species	Record the frequency and % cover of negative indicator species. Record in period May-July. <i>Cirsium arvense, Cirsium vulgare, Rumex crispus, Rumex obtusifolius, Senecio jacobaea, Urtica dioica.</i>	No species/taxa more than occasional throughout the sward or singly or together more than 5% cover	Invasive species chosen to indicate problems of eutrophication and disturbance from various sources when outside target eg poaching, stock feeding.
		*Sward composition: negative indicator species	Record the frequency and % cover of all tree and scrub species excluding <i>Juniperus communis</i> , considered together, in period May-July. NB If scrub/tree species are more than occasional throughout the sward but less than 5% cover, they are soon likely to become a problem if grazing levels are not sufficient or if scrub control is not being carried out.	No more than 5% cover.	Invasive species outside target shows that habitat is not being managed sufficiently eg under-grazed.

		Sward structure: average height	Record sward height in period May-July.	Sward 2-10 cms.	Outside target indicates insufficient grazing or over-grazing.
		Sward structure: litter	Record cover of litter where in a more or less continuous layer, distributed either in patches or in one larger area, in period May-July.	Total extent no more than 25% of the sward	Outside target indicates biomass removal is insufficient eg under-grazed.
		Sward structure: bare ground	Record extent of bare ground (not rock) distributed through the sward, visible without disturbing the vegetation, in period May-July.	No more than 10% .	Outside target indicates management problems eg over-grazing.
		Sward structure: localized bare ground	Record extent of localized bare ground around rabbit warrens.	No more than 0.05 ha ie approximately 20x20 metres	Outside target indicates rabbit grazing and disturbance levels are too high.
Unimproved calcareous grassland	CG6, dry scrub transitions (MG1-related, CG2d-related)	*Extent	Total area (ha), as mapped by Sampson (1990), in period May-July.	No reduction in area and any consequent fragmentation without prior consent	Recoverable reduction = unfavourable; non-recoverable reduction = partially destroyed. Excludes bare ground associated with rabbit warrens (see below).
		*Sward composition: positive indicator species	Record the frequency of positive indicator species in period May- July. <i>Agrimonia eupatoria, Centaurea nigra, Centaurea scabiosa, Clinopodium vulgare, Galium verum, Geranium sanguineum, Knautia arvensis, Lathyrus pratensis, Leontodon hispidus, Lotus corniculatus, Orchidaceae spp., Origanum vulgare, Pimpinella spp., Primula veris, Sanguisorba minor, Teucrium scorodonia, Thymus spp., Tragopogon pratensis.</i>	At least two species/taxa frequent and two species/taxa occasional throughout the sward	Choice of species related to NVC type and restriction to unimproved grassland, considered satisfactory when inside target. Among possible species that could be used, choice further restricted by ease of identification, visibility in recording period.
		*Sward composition: grass/herb ratio	Proportion of non-Graminae (“herbs”), in period May -July.	30-90%	Low proportion outside target indicates eutrophication, usually from fertilisers, or insufficient removal of biomass, leading to dominance by grasses.
		*Sward composition: negative indicator species	Record the frequency and % cover of negative indicator species. Record in period May-July. <i>Cirsium arvense, Cirsium vulgare, Rumex crispus, Rumex obtusifolius, Senecio jacobaea, Urtica dioica.</i>	No species/taxa more than occasional throughout the sward or singly or together more than 5% cover	Invasive species chosen to indicate problems of eutrophication and disturbance from various sources when outside target eg poaching, stock feeding.
		*Sward	Record the frequency and % cover of	No more than 30%	Invasive species outside target shows that habitat is not being

		composition: negative indicator species	all tree and scrub species excluding <i>Juniperus communis</i> , considered together, in period May-July. NB If scrub/tree species are frequent or more throughout the sward but less than 30% cover, they are soon likely to become a problem if grazing levels are not sufficient or if scrub control is not being carried out.	cover.	managed sufficiently eg under-grazed.
		Sward structure: average height	Record sward height in period May-July.	Sward 5-50 cms.	Outside target indicates insufficient grazing or over-grazing.
		Sward structure: litter	Record cover of litter where in a more or less continuous layer, distributed either in patches or in one larger area, in period May-July.	Total extent no more than 50% of the sward	Outside target indicates biomass removal is insufficient eg under-grazed.
		Sward structure: bare ground	Record extent of bare ground (not rock) distributed through the sward, visible without disturbing the vegetation, in period May-July.	No more than 10% .	Outside target indicates management problems eg over-grazing.
		Sward structure: localized bare ground	Record extent of localized bare ground around rabbit warrens.	No more than 0.05 ha ie approximately 20x20 metres	Outside target indicates rabbit grazing and disturbance levels are too high.
Unimproved calcareous grassland	CG7a,b,d,e	*Extent	Total area (ha), as mapped by Sampson (1990), in period end April-mid July.	No reduction in area and any consequent fragmentation without prior consent	Recoverable reduction = unfavourable; non-recoverable reduction = partially destroyed. Excludes bare ground associated with rabbit warrens (see below).
		*Sward composition: positive indicator species	Record the frequency of positive indicator species in period end April-mid July. <i>Aira</i> spp., <i>Aphanes</i> spp., <i>Astragalus danicus</i> , <i>Centaureum erythraea</i> , <i>Cladonia</i> spp, <i>Dianthus deltoides</i> , <i>Erigeron acer</i> , <i>Erodium cicutarium</i> , <i>Fragaria vesca</i> , <i>Galium verum</i> , <i>Helianthemum nummularium</i> , <i>Leontodon hispidus/L. saxatilis</i> , <i>Lotus corniculatus</i> , <i>Ornithopus perpusillus</i> , <i>Pilosella officinarum</i> (<i>Hieracium pilosella</i>), <i>Plantago coronopus</i> , <i>Rumex acetosella</i> , <i>Sedum acre</i> , <i>Teesdalia nudicaulis</i> , <i>Thymus</i> spp.	At least two species/taxa frequent and four species/taxa occasional throughout the sward	Choice of species related to NVC type and restriction to unimproved grassland, considered satisfactory when inside target. Among possible species that could be used, choice further restricted by ease of identification, visibility in recording period.

		*Sward composition: negative indicator species	Record the frequency and % cover of negative indicator species. Record in period end April-mid July. <i>Carduus nutans, Chamerion angustifolium, Cirsium arvense, Cirsium vulgare, Plantago major, Urtica dioica.</i>	No species/taxa more than occasional throughout the sward or singly or together more than 5% cover	Invasive species chosen to indicate problems of eutrophication and disturbance from various sources when outside target eg poaching, stock feeding.
		*Sward composition: negative indicator species	Record the frequency and % cover of all tree and scrub species excluding <i>Juniperus communis</i> , considered together, in period end April-mid July. NB If scrub/tree species are more than occasional throughout the sward but less than 5% cover, they are soon likely to become a problem if grazing levels are not sufficient or if scrub control is not being carried out.	No more than 5% cover.	Invasive species outside target shows that habitat is not being managed sufficiently eg under-grazed.
		*Sward composition: negative indicator species	Record % cover of coarse grasses eg <i>Holcus lanatus, Dactylis glomerata</i> , in period end April-mid July.	No more than 10% cover	Invasive species chosen to indicate problems of eutrophication and insufficient removal of biomass eg under-grazing
		Sward composition: negative indicator species	Record frequency of <i>Senecio jacobaea</i> , in period end April-mid July.	No more than occasional throughout the sward	Frequency outside target indicates management problems eg over-grazing and trampling.
		Sward structure: average height	Record sward height in period end April-mid July.	Sward 5 cms or less	Outside target indicates insufficient grazing.
		Sward structure: litter	Record cover of litter where in a more or less continuous layer, distributed either in patches or in one larger area, in period end April-mid July.	Total extent no more than 25% of the sward	Outside target indicates biomass removal is insufficient eg under-grazed.
		Sward structure: bare ground	Record extent of bare ground (not rock) distributed through the sward, visible without disturbing the vegetation, in period end April-mid July.	No more than 15% .	Outside target indicates management problems eg over-grazing.
		Sward structure: localized bare ground	Record extent of localized bare ground around rabbit warrens.	No more than 0.25 ha ie approximately 50x50 metres	Heavy rabbit grazing usually associated with type but outside target indicates rabbit grazing and disturbance levels are too high.

Operational feature	Criteria features	Attributes	Measure	Target	Comment
Semi-natural woodland	Residual alluvial woodland (mainly parts of NVC types W2,5,6,7)	1. Area	Extent/location of stands	At least current total area of recent semi-natural stands maintained, as mapped by Sampson (1990) and Smith/ESL (1999)	A high proportion of this type of woodland may be recent and hence a dynamic interchange with open wet communities may occur. Stand destruction may occur if the understorey and ground flora are irretrievably damaged even if the canopy remains intact. Area and location of stands may be assessed remotely or by site visit.
		2. Natural processes and structural development	Age/size class variation within and between stands; presence of open space and old trees; dead wood lying on the ground;	At least the current level of structural diversity maintained. Understorey (2-5m) present	Any changes leading to exceedance of these limits due to natural processes are likely to be acceptable. There is generally a good structural variety in these stands

			standing dead trees	<p>over at least 20% of total stand area</p> <p>Ground flora present over at least 50% of area excluding temporary pool areas</p> <p>Canopy cover present over 30-90 % of stand area</p> <p>Age class structure (mostly naturally regenerated stands with smaller areas of old alder coppice) to be allowed to develop naturally.</p> <p>A minimum of 3 fallen lying trees or major branches per ha and 4 trees per ha allowed to die standing.</p> <p>At least the current level of natural hydrological features should be maintained (ditches, channels, pools and flooding)</p>	<p>although veteran trees may be under-represented because of past treatment and the unstable nature of some sites. The ground flora may appear sparse, particularly where periodic flooding leaves areas of bare mud etc. Its composition may be variable (see attribute 5). In coppiced stands a lower canopy cover (of standards) can be accepted.</p> <p>Dead wood is often abundant but because there tend to be fewer big trees; the size of the fallen wood is often small. Flooding may lead to local accumulations with other areas totally lacking fallen wood.</p> <p>Where possible the hydrological regime should be allowed to revert to a more natural state.</p> <p>Water table should be maintained close to the soil surface and flooding should take place at least annually.</p>
		3.Regeneration potential	Successful establishment of young stems in gaps or on the edge of a stand	<p>Signs of seedlings growing through to saplings to young trees at sufficient density to maintain canopy density over a 10 yr period (or equivalent regrowth from coppice stumps).</p> <p>No planting in stands where it has not occurred in the last 15 years.</p>	<p>A proportion of gaps at any one time may develop into permanent open space; equally some current permanent open space/glades may in time regenerate to closed canopy. Regeneration may often occur on the edges of stands rather than in gaps within it.</p> <p>In coppice most of the regeneration will be as stump regrowth.</p> <p>Assess this attribute by walking through the wood in spring/summer.</p>
		4. Composition	Cover of native versus non-native species (all layers)	<p>At least the current level of site-native species maintained.</p> <p>At least 90% of cover in any one layer of site-native or acceptable naturalised species.</p> <p>Death, destruction or</p>	<p>Where cover in any one layer is less than 100% then the 90% target applies to the area actually covered by that layer.</p> <p>[Factors leading to the death or replacement of woodland</p>

			replacement of native woodland species through effects of non-native fauna or external unnatural factors	replacement of native woodland species through effects of introduced fauna or other external unnatural factors - not more than 10% by number or area in a five year period.	species could include pollution, including eutrophication from adjacent farmland; new diseases (eg alder dieback).] Excessive browsing/grazing by even native ungulates (e.g. deer) may be considered an unnatural external factor where it leads to undesirable shifts in the composition or structure of the stand, although this may be picked up by attributes 2 or 5 anyway.
		5. Species, habitats, structures characteristic of the site.	<p>Ground flora type</p> <p>Distinctive and desirable elements: at STANTA include abundant Bird cherry <i>Prunus padus</i> in the shrub layer</p> <p>Patches of associated habitats and transitions eg to ash wood or to open fen, shingle banks and open water</p>	<p>80% of ground flora cover referable to relevant NVC wet woodland community (W 1-7)</p> <p>Distinctive elements maintained at current levels and in current locations (where appropriate).</p> <p>* Patches and transitions maintained in extent and where appropriate location.</p>	<p>Changes leading to these targets not being met may be acceptable where this is due to natural processes.</p> <p>[Distinctive elements and patches should be marked on maps for ease of checking in the field wherever possible.]</p>

Operational feature	Criteria features	Attributes	Measure	Target	Comment
Great-crested Newt	Ponds	Presence of species	Continued presence of species	Record of species in every year where monitoring of ponds is possible	Record by observation at any life stage.
	Ponds	Presence of pond(s)	Ponds (permanent and temporary) to remain in suitable numbers to sustain the size and range of population, as reported by Gibbons (1998)	Target number of ponds : STANTA - at least 100% of the ponds present in 1998	Record number of ponds in specific conservation objectives.
	Ponds	Pollution	Absence of pollution	No non-accidental pollution is acceptable; in unfavourable condition if pollution is gross ie. affecting vegetation. Minor algal blooms not necessarily a problem	If significant pollution is found the source needs to be found and addressed. If the pollution problem will not clear of itself within one season advice should be sought on cleaning the pond.
	Ponds	Extent (depth and persistence).	Ponds should be of sufficient size and depth to avoid desiccation over the course of the breeding/ tadpole development season (February to mid-August) for at least one in every three years. Ponds to be found throughout the site.	Three consecutive years of desiccation with no recruitment should be considered unfavourable. Deep ponds, such as some at STANTA are acceptable where there is no chance of colonisation by fish.	
	Ponds	Shading	Extent of shading	Slight levels of shading probably beneficial especially where trees to northern side of pond Ponds with more than 25% southern margin shaded or 50% of total margin shaded are unfavourable.	
	Ponds	Fish	Absence of fish in majority of ponds.	Unfavourable if any fish are found to be present, including sticklebacks.	Fish should not be introduced into any pond with a record of Great-crested newts. Action to remove fish is less important if pond is likely to desiccate or if, for any reason, good levels of recruitment are found (tadpole counts).
	Terrestrial habitat	Extent	Total area of site as notified	No loss of area or fragmentation of site. No barriers to newt movement between ponds	
	Terrestrial habitat	Habitat	Structural variety of vegetation	Extensive, structurally varied	Type of habitat varies between pond sites at STANTA.

		structure and quality	or habitat features within site	habitats in close proximity (or continuous with) breeding pools. Structural variation of habitats is a consequence of vegetation that offers a good range of height variation at the ground to shrub layer. The habitats should offer refuges which are shaded and capable of retaining some moisture.	There is a need to record the condition of sites and define components of structural variety. Absence or only small areas of such habitat may be unfavourable.
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Operational feature	Criteria features	Attributes	Measure	Target	Comment
All habitats; heathland, acid grassland, chalk grassland and/or inland dune communities	Annex 1 populations of European importance: stone-curlew, nightjar, woodlark	Extent and distribution of habitat	Area, measured periodically (frequency to be determined)	No significant decrease from reference level.	Methodology for assessing target to be determined. Reference level to be determined.
	Annex 1 populations of	Disturbance	Reduction or displacement of birds, measured periodically	No significant reduction or displacement of birds	Methodology for assessing target to be determined. Reference level to be determined.

	European importance: stone-curlew, nightjar, woodlark		(frequency to be determined)	attributable to human disturbance in relation to reference level.	
	Annex 1 population of European importance: stone-curlew	Food availability -	Abundance of soil and dung invertebrates, measured periodically (frequency to be determined)	Presence and abundance of prey species should not deviate significantly from reference level	Including e.g. beetles, grasshoppers, flies, earthworms, snails, slugs. Methodology for assessing target to be determined. Reference level to be determined.
	Annex 1 population of European importance: nightjar	Food availability	Abundance of night-flying insects, measured periodically (frequency to be determined).	Presence and abundance of prey species should not deviate significantly from reference level.	Moths and beetles are important for nightjar. Methodology for assessing target to be determined. Reference level to be determined.
	Annex 1 population of European importance: woodlark	Food availability	Abundance of ground-surface invertebrates, measured periodically (frequency to be determined).	Presence and abundance of prey species should not deviate from reference level.	Including e.g. spiders, weevils, caterpillars. Methodology for assessing target to be determined. Reference level to be determined.
	Annex 1 population of European importance: stone-curlew	Vegetation characteristics	Extent and proportions of patches of at least half-hectare with vegetation less than 2cm high and at least 10% bare ground and unrestricted views over 200m, patches of medium height vegetation for roosting, measured periodically (frequency to be determined).	No significant decrease in extent and proportions of patches of at least half-hectare with vegetation less than 2cm high and at least 10% bare ground and unrestricted views over 200m, patches of medium height vegetation for roosting, measured periodically; from reference level.	Methodology for assessing target to be determined. Reference level to be determined.
	Annex 1 population of European importance: nightjar	Vegetation characteristics	Extent and proportions of open ground with predominantly low vegetation (feeding), bare patches (nesting), and sparse woodland / scrub cover (feeding, roosting) measured periodically (frequency to be determined).	No significant decrease in extent and proportions of open ground with predominantly low vegetation (feeding), bare patches (nesting), and sparse woodland / scrub cover (feeding, roosting) from reference level.	Nightjar require vegetation mostly of 20-60cm with frequent bare patches greater than 2m ² , 10-20% bare ground (nesting) and less than 50% tree/scrub cover overall Reference level to be determined
	Annex 1 population of European importance: woodlark	Vegetation characteristics	Extent and proportions of mix of shrub / tree cover (display), short-medium vegetation and bare ground (feeding, roosting, nesting), measured periodically (frequency to be determined).	No significant decrease in extent and proportions of mix of shrub / tree cover (display), short-medium vegetation and bare ground (feeding, roosting, nesting).	Frequent bare patches under 0.5 ha within mosaic of short (under 5cm high) to medium (10-20cm high) ground vegetation, and small clumps of shrubs or trees. Methodology for assessing target to be determined. Reference level to be determined.

SLR/NS



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cSAC: The Broads

SPA: Broadland

Component SSSI: Stanley and Alder Carrs, Aldeby

Conservation objectives for the European Interest on the SSSI

The conservation objectives for the European interest on the SSSI are:

to maintain*, in favourable condition, the:

- Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior*.

to maintain*, in favourable condition, the habitats for the population of:

- Desmoulin's whorl snail (*Vertigo moulinsiana*).
- Otter (*Lutra lutra*).

to maintain*, in favourable condition, the habitats for the populations of Annex1 bird species⁺ of European importance with particular reference to:

- fen with ditches and water bodies.

+Marsh harrier, Hen harrier.

to maintain*, in favourable condition, the habitats of the populations of waterfowl that contribute to the wintering waterfowl assemblage of European importance, with particular reference to:

- fen with ditches and water bodies.

* maintenance implies restoration if the feature is not currently in favourable condition.

The Conservation Objectives for The Broads candidate Special Area of Conservation and Broadland Special Protection Area are, in accordance with para C 10 of PPG 9, the reasons

for which the cSAC was designated and the SPA classified. The entry of 30 January 1996 on the Register of European Sites gives the reasons for which the SPA was classified.

The **Broads cSAC** and **Broadland SPA** includes land within: Alderfen Broad SSSI, Ant Broads and Marshes SSSI, Barnby Broad and Marshes SSSI, Broad Fen, Dilham SSSI, Bure Broads and Marshes SSSI, Burgh Common and Muckfleet Marshes SSSI, Calthorpe Broad SSSI, Cantley Marshes SSSI, Crostwick Marsh SSSI, Decoy Carr, Acle SSSI, Ducan's Marsh, Claxton SSSI, Geldeston Meadows SSSI, Hall Farm Fen, Hemsby SSSI, Halvergate Marshes SSSI, Hardley Flood SSSI, Limpenhoe Meadows SSSI, Ludham-Potter Heigham Marshes SSSI, Poplar Farm Meadows, Langley SSSI, Priory Meadows, Hickling SSSI, Shallam Dyke Marshes, Thurne SSSI, Smallburgh Fen SSSI, Sprat's Water and Marshes, Carlton Colville SSSI, Stanley and Alder Carrs, Aldeby SSSI, Upper Thurne Broads and Marshes SSSI, Upton Broads and Marshes SSSI and Yare Broads and Marshes SSSI.

The **Broads cSAC** additionally includes land within: Damgate Marshes, Acle SSSI and Trinity Broads SSSI.

Favourable Condition Table for Stanley and Alder Carrs SSSI

The Favourable Condition Table will be used by English Nature and other relevant authorities to determine if a site is in favourable condition. Favourable condition is achieved when the targets given below are met.

The favourable condition table should inform the scope and nature of any 'appropriate assessment' under the Habitats Regulations, but an appropriate assessment will also require consideration of issues specific to the individual plan or project. The favourable condition table does not by itself provide a comprehensive basis on which to assess plans and projects as required under Regulations 20-21, 24, 48-50 and 54 - 85. The scope and content of an appropriate assessment will depend upon the location, size and significance of the proposed project. English Nature will advise on a case by case basis.

Following an appropriate assessment, competent authorities are required to ascertain the effect on the integrity of the site. The integrity of the site is defined in para C10 of PPG9 as the coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified. The determination of favourable condition is separate from the judgement of effect upon integrity. For example, there may be a time-lag between a plan or project being initiated and a consequent adverse effect upon integrity becoming manifest in the condition assessment. In such cases, a plan or project may have an adverse effect upon integrity even though the site remains in favourable condition.

Annual counts for qualifying bird species will be used by English Nature, in the context of five year peak means, together with available information on UK population and distribution trends, to assess whether the SPA is continuing to make an appropriate contribution to the Favourable Conservation Status of the species across Europe.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i>, <i>Alnion incanae</i>, <i>Salicion alvae</i>) Semi-natural woodland	Parts of NVC types W5 and 6)	Extent	Extent/location of stands	No loss of ancient semi-natural stands At least current area of recent semi-natural stands maintained, although their location may alter. At least the area of ancient woodland retained	* Stand loss due to natural processes eg in minimum intervention stands may be acceptable. * A high proportion of this type of woodland may be recent and hence a dynamic interchange with open wet communities may occur. * Stand destruction may occur if the understorey and ground flora are irretrievably damaged even if the canopy remains intact. * Loss = 0.5 ha or 0.5% of the stand area, whichever is the smaller. * 20% canopy cover is conventionally taken as the lower limit for an area to be considered as woodland. Stands of willow scrub may pose difficulties of definition. * Area and location of stands may be assessed remotely or by site visit.
		2. Natural processes and structural development	Age/size class variation within and between stands; presence of open space and old trees; dead wood lying on the ground; standing dead trees	* At least the current level of structural diversity maintained. * Understorey (2-5m) present over at least 20% of total stand area * Ground flora present over at least 50% of area excluding temporary pool areas * Canopy cover present over 30-90 % of stand area	* Any changes leading to exceedance of these limits due to natural processes are likely to be acceptable. * There is generally a good structural variety in these stands although veteran trees may be under-represented because of past treatment and the unstable nature of some sites. * The ground flora may appear sparse, particularly where periodic flooding leaves areas of bare mud etc. Its composition may be variable (see attribute 5). * In coppiced stands a lower canopy cover (of standards) can be accepted.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
				<ul style="list-style-type: none"> * Age class structure appropriate to the site, its history and management. * A minimum of 3 fallen lying trees or major branches per ha and 4 trees per ha allowed to die standing. * At least the current level of natural hydrological features should be maintained (channels, pools, periodic flooding) 	<ul style="list-style-type: none"> * See JNCC guidance note for the sorts of age structure likely to be appropriate for different types of management regime. * Dead wood is often abundant but because there tend to be fewer big trees the size of the fallen wood is often small. Flooding may lead to local accumulations with other areas totally lacking fallen wood. * Assess this attribute by field survey. * Where possible the hydrological regime should be allowed to revert to a more natural state.
		3.Regeneration potential	Successful establishment of young stems in gaps or on the edge of a stand	<ul style="list-style-type: none"> * Signs of seedlings growing through to saplings to young trees at sufficient density to maintain canopy density over a 10 yr period (or equivalent regrowth from coppice stumps). * No planting in stands. 	<ul style="list-style-type: none"> * A proportion of gaps at any one time may develop into permanent open space; equally some current permanent open space/glades may in time regenerate to closed canopy. * Regeneration may often occur on the edges of stands rather than in gaps within it. * In coppice most of the regeneration will be as stump regrowth. See JNCC Guidance Note on likely desirable levels of regeneration. * The minimum level of regeneration to be acceptable from a nature conservation viewpoint is likely to be much less than that needed where wood production is also an objective. * Assess this attribute by walking through the wood in spring/summer.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		4. Composition	Cover of native versus non-native species (all layers) Death, destruction or replacement of native woodland species through effects of non-native fauna or external unnatural factors	* At least the current level of site-native species maintained. * At least 90% of cover in any one layer of site-native or acceptable naturalised species. * Death, destruction or replacement of native woodland species through effects of introduced fauna or other external unnatural factors not more than 10% by number or area in a five year period.	* In sites where there might be uncertainty as to what counts as site-native or as an acceptable naturalised species this must be made clear (eg the position of poplar). * Where cover in any one layer is less than 100% then the 90% target applies to the area actually covered by that layer. * Factors leading to the death or replacement of woodland species could include pollution, including eutrophication from adjacent farmland; new diseases (eg alder dieback). * Damage to species by non-native species that does not lead to their death or replacement by non woodland species (eg damage from squirrels to trees that non-the-less survive) is not necessarily unacceptable in nature conservation terms. * Excessive browsing/grazing by even native ungulates may be considered an unnatural external factor where it leads to undesirable shifts in the composition/structure of the stand, although this may be picked up by attributes 2 or 5 anyway. * Assess this attribute by a walk through the site.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		5. Species, habitats, structures characteristic of the site.	Ground flora type Distinctive and desirable elements for a given site eg. locally uncommon species such as <i>Carex elata</i> ; veteran trees or rich invertebrate assemblages. Patches of associated habitats and transitions eg to ash wood, open fen and open water	* 80% of ground flora cover referable to relevant NVC wet woodland community (W5 and 6) * Distinctive elements maintained at current levels and in current locations (where appropriate). * Patches and transitions maintained in extent and where appropriate location.	* Changes leading to these targets not being met may be acceptable where this is due to natural processes. * Distinctive elements and patches should be marked on maps for ease of checking in the field wherever possible. * If there are species groups/assemblages that cannot be assessed directly on a general site visit then surrogate features should be given where possible, eg dead wood concentrations for associated invertebrates.
River	Otter <i>Lutra lutra</i>	Water quality	EA scale	"Good", with no pollution incidents	Refer to Environment Agency for data
		Flow rate	Mean annual flow rate	No reduction attributable to increased abstraction.	Data from Environment Agency
		Site integrity	Total area	No reduction of fragmentation of area	
		Fish stocks	EA assessment	Fish stocks appropriate to the nutrient status of the river No significant decline in fish biomass or species diversity	Refer to Environment Agency for sample data
		Disturbance	Extent of public access to river	No significant change to river or bankside usage; no significant development	

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		Bankside cover	Proportion of bank lined with trees, scrub or other thick cover	No overall permanent decrease	Some change acceptable as long as it is appropriately mitigated
		Presence of otters	Signs of otters	Signs of otters found at least once per year	Use data from national or county surveys
Rivers fens	Desmoulin's whorl snail <i>Vertigo mouliniana</i>	structure and composition of marginal vegetation	Length or area of stand of appropriate vegetation	The extent of suitable habitat should be maintained, compared to the extent on a baseline map, over appropriate lengths of river or area of fen or pool margin [length of river or area of fen or swamp, and number of sample stretches to be decided locally]. Suitable vegetation will be dense, unbroken stands of <i>Glyceria maxima</i> , <i>Carex riparia</i> , <i>C. acutiformis</i> , <i>C. paniculata</i> , <i>Cladium mariscus</i> and/or sparse <i>Phragmites</i> and <i>Phalaris arundinacea</i> .	It is expected that traditional and accepted river management will cause local deterioration of some stands but the aim is to ensure that habitat in appropriate condition is present at frequent intervals along a river corridor. The snail appears to be able to colonise new adjacent stands rapidly, and closely spaced, fragmented patches may provide acceptable conditions for this species. Habitat should be a suitable size and linked to rivers and waterways hydrologically and not separated by barriers such as mown paths.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Rivers fens		water table	1. depth below ground level; 2 & 3. vegetation indicators of drying out.	1. Water table must be close to the surface so that the ground remains squelchy all year, i.e. never drying out, so that, even in high summer, water will rise when the soil is trodden. Winter flooding is permissible. 2. Not more than 10% (occasional on the DAFOR scale) replacement of preferred dominant species by dense tall reed or by plants of drier conditions, e.g. <i>Urtica dioica</i> , <i>Epilobium hirsutum</i> , and low grasses invading the litter layer, within pre-selected stands (as selected for	<i>V. mouliinsiana</i> requires highly humid conditions which are met by a high water table below the stands of vegetation in which it lives. Unfavourably wet conditions can result from prolonged flooding in summer or water penning being set too high. Current research (2000-01) will refine acceptable limits and measures for soil moisture. measuring extent). 3. Not more than 10% (occasional on the DAFOR scale) replacement of tall monocotyledons by plants preferring wetter conditions, e.g. <i>Rorippa nasturtium-aquaticum</i> , <i>Apium nodiflorum</i> and <i>Berula erecta</i> .
Rivers fens		vegetation height	height of bulk of the vegetation	Average height of the stands no less than 50 cm.	<i>V. mouliinsiana</i> requires tall leaves on which it lives almost of the year. Heavy grazing and mowing may be detrimental if it removes most taller clumps.
Rivers fens		shading by shrubs and trees (e.g. willow, alder)	proportion of habitat	Less than 10% increase in area of shade, compared to extent on the baseline map.	

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
rivers fens		water quality	Biological class - Environment Agenc's General Quality Assessment scheme. Assess every 5 years River Ecosystem Class. Assess against Environment Agency monitoring results. Suspended solides	>= 'b' In addition, no drop in class from exiting situation. >= RE3 In addition, no drop in class from exiting situation.	Although the snail lives out of the water, water quality may influence vegetation structure and perhaps the microflora living on the leaf surfaces where the snail feeds, and chemical quality may directly affect the snail when it is submerged during floods. Future experience and research may indicate that these variables are inapplicable to <i>V. moulinsiana</i> . No values are given for suspended solids as this pollutant has no direct influence on the condition of the habitat for moulinsiana. No monitoring targets are set for hardness but assessments for projects must take account of the snail's need for water whose hardness must not fall below value expected for the catchment.
All habitats: Swamp, Marginal and Inundation, Standing Water	Annex 1 species of European importance and waterfowl assemblage including migratory species of national importance.	Extent of habitat.	Area (ha), measured periodically (frequency to be determined).	No significant decrease from reference level.	For all habitats for all qualifying species. Methodology for assessing target to be determined. Reference level to be determined.
		Disturbance in roosting and feeding areas	Reduction or displacement of birds, measured periodically (frequency to be determined).	No significant displacement of birds attributable to human disturbance in relation to reference level.	All qualifying breeding and wintering annex 1 and migratory species. Methodology for assessing target to be determined. Reference level to be determined.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
All habitats: Swamp, Marginal and Inundation, Standing Water	Annex 1 species of European importance.	Food Availability	Abundance of live mammals and birds, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of food species year round in relation to reference level.	Small-medium sized mammals (voles, mice, rabbits) and birds (pipits to ducks) are important prey in the breeding season for marsh harriers and during the winter for hen harriers. Methodology for assessing target to be determined. Reference level to be determined.
Swamp, Marginal and Inundation	Annex 1 species of European importance.	Landscape	Large, unbroken expanse of emergent vegetation (nesting, feeding, concealment), measured periodically (frequency to be determined).	No significant reduction in expanse of emergent vegetation year round.	Marsh Harrier require continuous reed over >20ha. Methodology for assessing target to be determined.
Swamp, Marginal and Inundation	Annex 1 species of European importance.	Vegetation characteristics	Tall emergent vegetation over whole area (nesting, concealment), measured periodically (frequency to be determined).	No significant reduction in extent of vigorous growth over the area, maintained through cutting regime.	Marsh harrier require at least 30% of the reedbed uncut and the remainder not more than 6 years old with no more than 20% cut in any year. Methodology for assessing target to be determined.
Swamp, Marginal and inundation	Annex 1 species of European importance.	Water depth	Shallow water within reeds and other emergent vegetation (feeding), measured periodically (frequency to be determined).	Water depth and extent of shallows within reeds and other emergent vegetation should not deviate significantly year round.	Marsh harrier require water throughout the reedbed of 10-30cm. Methodology for assessing target to be determined.
Standing Water	Migratory species of national importance.	Food Availability	Presence and abundance of aquatic plants, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of food species during the winter season in relation to reference level.	<i>Chara, Cladophora, Potamogeton, Ruppia, Ranunculus</i> and <i>Elodea</i> are important for Coot. Methodology for assessing target to be determined. Reference level to be determined.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Standing Water	Nationally important migratory species.	Food availability	Presence and abundance of surface and benthic invertebrates, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of prey species during the winter season in relation to reference level.	Mytilus, Dreissena polymorpha and caddis-fly larvae are important for coot. Methodology for assessing target to be determined. Reference level to be determined.
Standing Water	Nationally important migratory species.	Food availability	Presence and abundance of fish, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of prey species during the winter season in relation to reference level.	Fish of 3-21 cm are important for great crested grebe. Methodology for assessing target to be determined. Reference level to be determined.
Standing Water	Migratory species of national importance.	Water depth	Areas of shallow medium and deep water (feeding), measured periodically (frequency to be determined).	Water depths should not deviate significantly during the winter season.	Great crested grebe require a water depth of 1-3m. Coot require a water depth of 0.5-2m. Methodology for assessing target to be determined.
Standing Water	Migratory species of national importance.	Water area	Large open areas of water(feeding, roosting), measured periodically (frequency to be determined).	No significant reduction in the area of open water for feeding and roosting during the winter season.	Coot require one or more freshwaters of >2ha. Great crested grebe require one or more freshwaters of >1ha. Methodology for assessing target to be determined.



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cSAC: Norfolk Valley Fens
Component SSSI: Southrepps Common

Conservation objective for the European Interest on the SSSI

The conservation objectives for the European interests on the SSSI are:

to maintain*, in favourable condition, the:

- Alkaline fens

* maintenance implies restoration if the feature is not currently in favourable condition.

The Conservation Objectives for Norfolk Valley Fens candidate Special Area of Conservation are, in accordance with para C10 of PPG 9, the reasons for which the cSAC was designated. The cSAC also includes land within Badley Moor, Dereham SSSI, Booton Common SSSI, Buxton Heath SSSI, Coston Fen, Runhall SSSI, East Walton and Adcock's Common SSSI, Flordon Common SSSI, Foulden Common SSSI, Great Cressingham Fen SSSI, Holt Lowes SSSI, Potter and Scarning Fens SSSI, Sheringham and Beeston Regis Common SSSI, Swangey Fen, Attleborough SSSI and Thompson Water, Carr and Common SSSI.

The favourable condition table will be used by English Nature to determine favourable condition and other relevant authorities to determine if a site is in favourable condition. Favourable condition is achieved when the targets set out below are met.

The favourable condition table should inform the scope and nature of any ‘appropriate assessment’ under the Habitats Regulations, but an appropriate assessment will also require consideration of issues specific to the individual plan or project. The favourable condition table does not by itself provide a comprehensive basis on which to assess plans or projects as required under Regulations 20-21, 24, 48-50 and 54-85. The scope and content of an appropriate assessment will depend upon the location, size and significance of the proposed project. English Nature will advise on a case by case basis.

Following an appropriate assessment, competent authorities are required to ascertain the effect on the integrity of the site. The integrity of the site is defined in para. C10 of PPG9 as ‘the coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified. The determination of favourable condition is separate from the judgement of effect upon integrity. For example, there may be a time lag between a plan or project being initiated and a consequent adverse effect upon integrity being manifest in the condition assessment. In such cases, a plan or project may have an adverse effect upon integrity even though the site remains in favourable condition.

Operational	Criteria feature	Attributes	Measures	Targets	Comments
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feature					
Spring and seepage-fed chalk-rich alkaline valley fen	M13 black bog rush - blunt flowered rush <i>Schoenus nigricans</i> - <i>Juncus subnodulosus</i> fen.	Extent	Extent identified in Norfolk Valley Fen NVC survey (Smart 1992-93)	Maintain as an absolute minimum baseline the overall area and extent identified by Smart (1992-93).	Extent of fen communities may be subject to some natural dynamic variation, in response to extensive grazing pressure.
		Water quantity and quality	High piezometric head and permanently high water table (allowing for natural seasonal fluctuations) The spring water has low fertility and is rich in base ions.	Summer water levels (July-September) to fall no more than 10 cm below the surface.	
		Vegetation structure	Presence of varied sward structure with full range of vegetation heights, from close cropped to tall and ungrazed. Includes varying degrees of tussock height. Always includes elements of short pioneer fen vegetation	At height of summer (July August), fen vegetation to be typically no more than 0.5 metres tall, with random mosaic of differing vegetation and tussock heights across whole fen area.	As with extent, likely to be influenced by grazing regime, with vegetation responding to variable grazing pressure over time.
		Vegetation composition	Moss and liverwort carpets. List A: <i>Juncus subnodulosus</i> List B: <i>Parnassia palustris</i> <i>Anagallis tenella</i> <i>Epipactis palustris</i> <i>Gymnodenia canopsea</i>	Low growing moss carpets to occupy between 5 and 15% of overall fen area. Species in list A to be at least frequent. All species in list B to be at least occasional.	Site is unusual in that <i>Schoenus nigricans</i> is absent from the community.
Operational feature	Criteria feature	Attributes	Measures	Targets	Comments
		Negative indicators	<i>Urtica dioica</i> <i>Salix cinerea</i> <i>Epilobium hirsutum</i> <i>Eupatorium cannabinum</i> <i>Fillipendula ulmaria</i>	Clumps of <i>Salix cinerea</i> to occupy no more than 5% of the overall fen area. All other species listed to be no more than rare in the overall fen area.	



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cSAC: The Broads

SPA: Broadland

Component SSSI: Sprat's Water and Marshes, Carlton Colville

Conservation objectives for the European Interest on the SSSI

The conservation objectives for the European interest on the SSSI are:

to maintain*, in favourable condition, the:

- Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior*.
- Natural eutrophic lakes with *Magnopotamion* or *Hydrocharition*-type vegetation.

to maintain*, in favourable condition, the habitats for the population of:

- Desmoulin's whorl snail (*Vertigo moulinsiana*).
- Otter (*Lutra lutra*).

to maintain*, in favourable condition, the habitats for the populations of Annex1 bird species⁺ of European importance with particular reference to:

- open water
- reed swamp
- fen
- reedbed
- lowland wet grassland with ditches and water bodies.

+Bittern, Marsh harrier, Hen harrier.

to maintain*, in favourable condition, the habitats for the populations of migratory bird species⁺ of European importance with particular reference to:

- open water
- reed swamp
- fen
- reedbed
- lowland wet grassland with ditches and water bodies.

+Gadwall and Shoveler.

to maintain*, in favourable condition, the habitats of the populations of waterfowl that contribute to the wintering waterfowl assemblage of European importance, with particular reference to:

- open water
- swamp and fen
- lowland wet grassland with ditches and water bodies.

* maintenance implies restoration if the feature is not currently in favourable condition.

The Conservation Objectives for The Broads candidate Special Area of Conservation and Broadland Special Protection Area are, in accordance with para C 10 of PPG 9, the reasons for which the cSAC was designated and the SPA classified. The entry of 30 January 1996 on the Register of European Sites gives the reasons for which the SPA was classified.

The **Broads cSAC** and **Broadland SPA** includes land within: Alderfen Broad SSSI, Ant Broads and Marshes SSSI, Barnby Broad and Marshes SSSI, Broad Fen, Dilham SSSI, Bure Broads and Marshes SSSI, Burgh Common and Muckfleet Marshes SSSI, Calthorpe Broad SSSI, Cantley Marshes SSSI, Crostwick Marsh SSSI, Decoy Carr, Acle SSSI, Ducan's Marsh, Claxton SSSI, Geldeston Meadows SSSI, Hall Farm Fen, Hemsby SSSI, Halvergate Marshes SSSI, Hardley Flood SSSI, Limpenhoe Meadows SSSI, Ludham-Potter Heigham Marshes SSSI, Poplar Farm Meadows, Langley SSSI, Priory Meadows, Hickling SSSI, Shallam Dyke Marshes, Thurne SSSI, Smallburgh Fen SSSI, Sprat's Water and Marshes, Carlton Colville SSSI, Stanley and Alder Carrs, Aldeby SSSI, Upper Thurne Broads and Marshes SSSI, Upton Broads and Marshes SSSI and Yare Broads and Marshes SSSI.

The **Broads cSAC** additionally includes land within: Damgate Marshes, Acle SSSI and Trinity Broads SSSI.

Favourable Condition Table for Sprat's Water and Marshes, Carlton Colville SSSI

The Favourable Condition Table will be used by English Nature and other relevant authorities to determine if a site is in favourable condition. Favourable condition is achieved when the targets given below are met.

The favourable condition table should inform the scope and nature of any 'appropriate assessment' under the Habitats Regulations, but an appropriate assessment will also require consideration of issues specific to the individual plan or project. The favourable condition table does not by itself provide a comprehensive basis on which to assess plans and projects as required under Regulations 20-21, 24, 48-50 and 54 - 85. The scope and content of an appropriate assessment will depend upon the location, size and significance of the proposed project. English Nature will advise on a case by case basis.

Following an appropriate assessment, competent authorities are required to ascertain the effect on the integrity of the site. The integrity of the site is defined in para C10 of PPG9 as the coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified. The determination of favourable condition is separate from the judgement of effect upon integrity. For example, there may be a time-lag between a plan or project being initiated and a consequent adverse effect upon integrity becoming manifest in the condition assessment. In such cases, a plan or project may have an adverse effect upon integrity even though the site remains in favourable condition.

Annual counts for qualifying bird species will be used by English Nature, in the context of five year peak means, together with available information on UK population and distribution trends, to assess whether the SPA is continuing to make an appropriate contribution to the Favourable Conservation Status of the species across Europe.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i>, <i>Alnion incanae</i>, <i>Salicion alvae</i>)	Parts of NVC types W2 and W5,6 and 7)	Extent	Extent/location of stands	<p>No loss of ancient semi-natural stands</p> <p>At least current area of recent semi-natural stands maintained, although their location may alter.</p> <p>At least the area of ancient woodland retained</p>	<p>* Stand loss due to natural processes eg in minimum intervention stands may be acceptable.</p> <p>* A high proportion of this type of woodland may be recent and hence a dynamic interchange with open wet communities may occur.</p> <p>* Stand destruction may occur if the understorey and ground flora are irretrievably damaged even if the canopy remains intact.</p> <p>* Loss = 0.5 ha or 0.5% of the stand area, whichever is the smaller.</p> <p>* 20% canopy cover is conventionally taken as the lower limit for an area to be considered as woodland. Stands of willow scrub may pose difficulties of definition.</p> <p>* Area and location of stands may be assessed remotely or by site visit.</p>

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Semi-natural woodland		2. Natural processes and structural development	Age/size class variation within and between stands; presence of open space and old trees; dead wood lying on the ground; standing dead trees Structures associated with the hydrological regime also need to be considered.	<ul style="list-style-type: none"> * At least the current level of structural diversity maintained. * Understorey (2-5m) present over at least 20% of total stand area * Ground flora present over at least 50% of area excluding temporary pool areas * Canopy cover present over 30-90 % of stand area Age class structure appropriate to the site, its history and management. * A minimum of 3 fallen lying trees or major branches per ha and 4 trees per ha allowed to die standing. * At least the current level of natural hydrological features should be maintained (channels, pools, periodic flooding) 	<ul style="list-style-type: none"> * Any changes leading to exceedance of these limits due to natural processes are likely to be acceptable. * There is generally a good structural variety in these stands although veteran trees may be under-represented because of past treatment and the unstable nature of some sites. * The ground flora may appear sparse, particularly where periodic flooding leaves areas of bare mud etc. Its composition may be variable (see attribute 5). * In coppiced stands a lower canopy cover (of standards) can be accepted. * See JNCC guidance note for the sorts of age structure likely to be appropriate for different types of management regime. * Dead wood is often abundant but because there tend to be fewer big trees the size of the fallen wood is often small. Flooding may lead to local accumulations with other areas totally lacking fallen wood. * Assess this attribute by field survey. * Where possible the hydrological regime should be allowed to revert to a more natural state.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		3.Regeneration potential	Successful establishment of young stems in gaps or on the edge of a stand	<p>* Signs of seedlings growing through to saplings to young trees at sufficient density to maintain canopy density over a 10 yr period (or equivalent regrowth from coppice stumps).</p> <p>* No planting in stands.</p>	<p>* A proportion of gaps at any one time may develop into permanent open space; equally some current permanent open space/glades may in time regenerate to closed canopy.</p> <p>* Regeneration may often occur on the edges of stands rather than in gaps within it.</p> <p>* In coppice most of the regeneration will be as stump regrowth. See JNCC Guidance Note on likely desirable levels of regeneration.</p> <p>* The minimum level of regeneration to be acceptable from a nature conservation viewpoint is likely to be much less than that needed where wood production is also an objective.</p> <p>* Assess this attribute by walking through the wood in spring/summer.</p>

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		4. Composition	Cover of native versus non-native species (all layers) Death, destruction or replacement of native woodland species through effects of non-native fauna or external unnatural factors	* At least the current level of site-native species maintained. * At least 90% of cover in any one layer of site-native or acceptable naturalised species. * Death, destruction or replacement of native woodland species through effects of introduced fauna or other external unnatural factors not more than 10% by number or area in a five year period.	* In sites where there might be uncertainty as to what counts as site-native or as an acceptable naturalised species this must be made clear (eg the position of poplar). * Where cover in any one layer is less than 100% then the 90% target applies to the area actually covered by that layer. * Factors leading to the death or replacement of woodland species could include pollution, including eutrophication from adjacent farmland; new diseases (eg alder dieback). * Damage to species by non-native species that does not lead to their death or replacement by non woodland species (eg damage from squirrels to trees that non-the -less survive) is not necessarily unacceptable in nature conservation terms. * Excessive browsing/grazing by even native ungulates may be considered an unnatural external factor where it leads to undesirable shifts in the composition/structure of the stand, although this may be picked up by attributes 2 or 5 anyway. * Assess this attribute by a walk through the site.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		5. Species, habitats, structures characteristic of the site.	<p>Ground flora type</p> <p>Distinctive and desirable elements for a given site eg. locally uncommon species such as <i>Carex elata</i>; veteran trees or rich invertebrate assemblages.</p> <p>Patches of associated habitats and transitions eg to ash wood, open fen and open water</p>	<p>* 80% of ground flora cover referable to relevant NVC wet woodland community (W 2, 5, 6 and 7)</p> <p>* Distinctive elements maintained at current levels and in current locations (where appropriate).</p> <p>* Patches and transitions maintained in extent and where appropriate location.</p>	<p>* Changes leading to these targets not being met may be acceptable where this is due to natural processes.</p> <p>* Distinctive elements and patches should be marked on maps for ease of checking in the field wherever possible.</p> <p>* If there are species groups/assemblages that cannot be assessed directly on a general site visit then surrogate features should be given where possible, eg dead wood concentrations for associated invertebrates.</p>

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
22.13 Natural eutrophic lakes with Magnopotamion or Hydrocharition type vegetation. Standing water-Broads,turf ponds and ditch systems	NVC types: A3 9 A13 A4 Types '7', '8', '9' and '10' of the GB Standing Water Classification.	Extent of community.	Check extent of beds in July/August every 4 years.	Extensive beds of submerged macrophytes should be present. Maintain mixed community.	Submerged vegetation characterised by broad leaved <i>Potamogeton</i> species such as <i>Potamogeton perfoliatus</i> , <i>P lucens</i> , <i>P crispus</i> , <i>P natans</i> , <i>P x salicilifolius</i> , <i>P coloratus</i> , <i>P polygonifolius</i> , <i>P gramineus</i> , <i>P. alpinus</i> and <i>Hydrocharition</i> type vegetation. <i>Hydrocharis morsus-ranae</i> is a very rare associate with the <i>Magnopotamion</i> in the UK. Its community components are present, however, mainly <i>Spirodela polyrhiza</i> , <i>Lemna minor</i> , <i>Hippuris vulgaris</i> , <i>Utricularia vulgaris</i> and <i>Apium inundatum</i> . Community should be mixed and no one species should be present above 40% level of total amount of macrophyte presence.
		Extent of <i>Potamogeton</i> species <i>Magnopotamion</i> .	Check species presence in July/August every 4 years.	Maintain species presence of all <i>Magnopotamion</i> and fine leaved <i>Potamogetons</i> .	No one <i>Potamogeton</i> species should be present above 40% level of total amount or level of macrophyte presence (see Water Quality comment).
		Extent of nationally scarce or threatened species.	Establish population size and position of nationally scarce, rare or threatened species over a period of 3 years, on a quarterly basis; thereafter every two years in July/August.	Maintain presence of all nationally scarce, rare or threatened plant species.	Nationally scarce, rare or threatened species can vary in population size and extent due to temporal/seasonal changes in climate which affects physical variables such as water temperature.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		Water quality	Arrange for analysis of quarterly measurements of Total P for first three years; thereafter annually in July/August.	Maintain water quality particularly Total P levels. For southern systems 100 $\mu\text{g l}^{-1}$ or below, down to 65 $\mu\text{g l}^{-1}$.	The variable targets for Total P reflects the geographical range of this trophic state. The target for Total P should be set for individual SAC's and an acceptable range established. Increases in Total P suggest a need to move from annual July/August check, back to more intensive quarterly samples to verify whether change is real. Also check for cover shifts of macrophytes and dominant presence of pollution tolerant species above 40% level such as <i>Potamogeton pectinatus</i> , <i>Myriophyllum spicatum</i> and/or <i>Ceratophyllum demersum</i> .
		Water quantity	Check lake levels during July/August.	Maintain hydrology of lake or ditch system.	Hydrology involves not only lake or ditch levels but flushing rates; prevent lowering or raising of lake or ditch level through modification of outfalls. With ditch systems aim for constant high water table throughout the year Water abstraction may represent a significant issue through the reduction of ground water and flushing flows into marginal ditch systems.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		Sediment	Check for excessive growths of individual macrophytes ie above 40%.	Maintain sediment quality and quantity.	Effects of increased macrophyte growth also relates to water quality; if this is at target levels, then enrichment of sediments is an issue if broad leaved <i>Potamogeton</i> species decline and fine leaved <i>Potamogeton pectinatus</i> increases above 40% level or <i>Myriophyllum spicatum</i> / <i>Ceratophyllum demersum</i> become dominant. Introduced fish and recreational use of site might through sediment disturbance move sites out of favourable condition. Check for increases in siltation from catchment use changes or changes in sewage treatment.
River	Otter <i>Lutra lutra</i>	Water quality	EA scale	"Good", with no pollution incidents	Refer to Environment Agency for data
		Flow rate	Mean annual flow rate	No reduction attributable to increased abstraction.	Data from Environment Agency
		Site integrity	Total area	No reduction of fragmentation of area	
		Fish stocks	EA assessment	Fish stocks appropriate to the nutrient status of the river No significant decline in fish biomass or species diversity	Refer to Environment Agency for sample data
		Disturbance	Extent of public access to river	No significant change to river or bankside usage; no significant development	

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		Bankside cover	Proportion of bank lined with trees, scrub or other thick cover	No overall permanent decrease	Some change acceptable as long as it is appropriately mitigated
		Presence of otters	Signs of otters	Signs of otters found at least once per year	Use data from national or county surveys
Rivers fens	Desmoulin's whorl snail <i>Vertigo moulinsiana</i>	structure and composition of marginal vegetation	Length or area of stand of appropriate vegetation	The extent of suitable habitat should be maintained, compared to the extent on a baseline map, over appropriate lengths of river or area of fen or pool margin [length of river or area of fen or swamp, and number of sample stretches to be decided locally]. Suitable vegetation will be dense, unbroken stands of <i>Glyceria maxima</i> , <i>Carex riparia</i> , <i>C. acutiformis</i> , <i>C. paniculata</i> , <i>Cladium mariscus</i> and/or sparse <i>Phragmites</i> and <i>Phalaris arundinacea</i> .	It is expected that traditional and accepted river management will cause local deterioration of some stands but the aim is to ensure that habitat in appropriate condition is present at frequent intervals along a river corridor. The snail appears to be able to colonise new adjacent stands rapidly, and closely spaced, fragmented patches may provide acceptable conditions for this species. Habitat should be a suitable size and linked to rivers and waterways hydrologically and not separated by barriers such as mown paths.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Rivers fens		water table	1. depth below ground level; 2 & 3. vegetation indicators of drying out.	1. Water table must be close to the surface so that the ground remains squelchy all year, i.e. never drying out, so that, even in high summer, water will rise when the soil is trodden. Winter flooding is permissible. 2. Not more than 10% (occasional on the DAFOR scale) replacement of preferred dominant species by dense tall reed or by plants of drier conditions, e.g. <i>Urtica dioica</i> , <i>Epilobium hirsutum</i> , and low grasses invading the litter layer, within pre-selected stands (as selected for	<i>V. moulinsiana</i> requires highly humid conditions which are met by a high water table below the stands of vegetation in which it lives. Unfavourably wet conditions can result from prolonged flooding in summer or water penning being set too high. Current research (2000-01) will refine acceptable limits and measures for soil moisture. measuring extent). 3. Not more than 10% (occasional on the DAFOR scale) replacement of tall monocotyledons by plants preferring wetter conditions, e.g. <i>Rorippa nasturtium-aquaticum</i> , <i>Apium nodiflorum</i> and <i>Berula erecta</i> .
Rivers fens		vegetation height	height of bulk of the vegetation	Average height of the stands no less than 50 cm.	<i>V. moulinsiana</i> requires tall leaves on which it lives most of the year. Heavy grazing and mowing may be detrimental if it removes most taller clumps.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Rivers fens		shading by shrubs and trees (e.g. willow, alder)	proportion of habitat	Less than 10% increase in area of shade, compared to extent on the baseline map.	
rivers fens		water quality	Biological class - Environment Agency's General Quality Assessment scheme. Assess every 5 years River Ecosystem Class. Assess against Environment Agency monitoring results. Suspended solids	>='b' In addition, no drop in class from exiting situation. >= RE3 In addition, no drop in class from exiting situation.	Although the snail lives out of the water, water quality may influence vegetation structure and perhaps the microflora living on the leaf surfaces where the snail feeds, and chemical quality may directly affect the snail when it is submerged during floods. Future experience and research may indicate that these variables are inapplicable to <i>V. moulinsiana</i> . No values are given for suspended solids as this pollutant has no direct influence on the condition of the habitat for <i>moulinsiana</i> . No monitoring targets are set for hardness but assessments for projects must take account of the snail's need for water whose hardness must not fall below value expected for the catchment.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
All habitats: Grassland Improved, Swamp, Marginal and Inundation, Standing Water	Annex 1 species of European importance and waterfowl assemblage including migratory species of European and national importance.	Extent of habitat.	Area (ha), measured periodically (frequency to be determined).	No significant decrease from reference level.	For all habitats for all qualifying species. Methodology for assessing target to be determined. Reference level to be determined.
		Disturbance in roosting and feeding areas	Reduction or displacement of birds, measured periodically (frequency to be determined).	No significant displacement of birds attributable to human disturbance in relation to reference level.	All qualifying breeding and wintering annex 1 and migratory species. Methodology for assessing target to be determined. Reference level to be determined.
All habitats: Grassland Improved, Swamp, Marginal and Inundation, Standing Water	Annex 1 species of European importance.	Food Availability	Abundance of live mammals and birds, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of food species year round in relation to reference level.	Small-medium sized mammals (voles, mice, rabbits) and birds (pipits to ducks) are important prey in the breeding season for marsh harriers and during the winter for hen harriers. Methodology for assessing target to be determined. Reference level to be determined.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Swamp, Marginal and Inundation	Annex 1 species of European importance.	Landscape	Large, unbroken expanse of emergent vegetation (nesting, feeding, concealment), measured periodically (frequency to be determined).	No significant reduction in expanse of emergent vegetation year round.	Bittern and Marsh Harrier require continuous reed over >20ha. Methodology for assessing target to be determined.
Swamp, Marginal and Inundation	Annex 1 species of European importance.	Vegetation characteristics	Pure reed stand with vigorous growth over whole area (nesting, concealment), measured periodically (frequency to be determined).	No significant reduction in extent of vigorous growth over the pure reed stand, maintained through cutting regime.	Bittern and marsh harrier require at least 30% of the reedbed uncut and the remainder not more than 6 years old with no more than 20% cut in any year. Methodology for assessing target to be determined.
Swamp, Marginal and inundation	Annex 1 species of European importance.	Water depth	Shallow water within reeds plus frequent deep pools and channels (feeding), measured periodically (frequency to be determined).	Water depth and extent of shallows within reeds should not deviate significantly with no significant reduction in the presence of deep pools and channels year round.	Bittern and marsh harrier require water throughout the reedbed of 10-30cm, and bittern also require pools 2-4m deep. Channels for bittern should be up to 2.5m deep, consisting of a deep central channel (>1.5m) and 1m deep/5m wide shallow margin on at least one side. Methodology for assessing target to be determined.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Swamp, Marginal and Inundation	Annex 1 species of European importance.	Hydrology flow	Stable Water levels, measured periodically (frequency to be determined).	Water levels should not deviate significantly during the breeding season.	<10cm fluctuation is required during the breeding season for Marsh Harrier. Methodology for assessing target to be determined.
Swamp, Marginal and Inundation Standing Water	Annex 1 species of European importance.	Food Availability	Presence and abundance of fish and amphibians, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of prey species year round, in relation to reference level.	Eel, rudd, roach of 6-35cm and frogs/toads are important for Bittern. Methodology for assessing target to be determined. Reference level to be determined.
Standing Water	Migratory species of European and national importance.	Food Availability	Presence and abundance of aquatic plants, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of food species during the winter season in relation to reference level.	<i>Glyceria fluitans, Agrostis stolonifera, Chara, Potamogeton and Ceratophyllum spp</i> for gadwall. <i>Scirpus, Eleocharis, Carex, Potamogeton and Glyceria</i> for shoveler. <i>Chara, Nitella and Potamogeton spp.</i> are important for tufted duck. <i>Chara, Cladophora, Potamogeton, Ruppia, Ranunculus and Elodea</i> are important for Coot. Methodology for assessing target to be determined. Reference level to be determined.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Standing Water	Nationally important migratory species.	Food Availability	Presence and abundance of seed bearing plants, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of food species during the winter season in relation to reference level.	<i>Polygonum, Eleocharis, Rumex</i> and <i>Ranunculus</i> are important for Teal. Methodology for assessing target to be determined. Reference level to be determined.
Standing Water	Migratory species of European and national importance.	Food availability	Presence and abundance of aquatic invertebrates, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of prey species during the winter season in relation to reference level.	<i>Hydrobia</i> , crustaceans, caddisflies, diptera and beetles are important for shoveler. <i>Hydrobia</i> , flies, caddisfly, beetles and bugs are important for teal. Methodology for assessing target to be determined. Reference level to be determined.
Standing Water	Nationally important migratory species.	Food availability	Presence and abundance benthic invertebrates, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of prey species during the winter season in relation to reference level.	<i>Dreissena polymorpha</i> , chironomid larvae, <i>Gammarus</i> and <i>Hydrobia</i> are important for tufted duck. Methodology for assessing target to be determined. Reference level to be determined.
Standing Water	Nationally important migratory species.	Food availability	Presence and abundance of surface and benthic invertebrates, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of prey species during the winter season in relation to reference level.	<i>Mytilus</i> , <i>Dreissena polymorpha</i> and caddis-fly larvae are important for coot. Methodology for assessing target to be determined. Reference level to be determined.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Standing Water	Nationally important migratory species.	Food availability	Presence and abundance of fish, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of prey species during the winter season in relation to reference level.	Fish of 3-21 cm are important for great crested grebe. Methodology for assessing target to be determined. Reference level to be determined.
Standing Water	Migratory species of European and national importance.	Water depth	Areas of shallow medium and deep water (feeding), measured periodically (frequency to be determined).	Water depths should not deviate significantly during the winter season.	Great crested grebe require a water depth of 1-3m. Gadwall require a water depth of <25cm. A kleptoparasitic relationship with Coot can allow Gadwall to potentially exploit deeper areas up to 2m in depth. Shoveler and teal require a water depth of <30cm. Coot require a water depth of 0.5-2m. Tufted duck require a water depth of 2-5m. Methodology for assessing target to be determined.
Standing Water	Annex 1 species of European importance.	Water area	Large open areas of water(feeding), measured periodically (frequency to be determined).	No significant reduction in the area of open water for feeding year round.	Bittern require one or more freshwater pools of >0.5ha not exceeding 20% of reedbed area overall. Methodology for assessing target to be determined.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Standing Water	Migratory species of national importance.	Water area	Large open areas of water(feeding, roosting), measured periodically (frequency to be determined).	No significant reduction in the area of open water for feeding and roosting during the winter season.	<p>Tufted duck require one or more freshwaters of >5ha.</p> <p>Coot require one or more freshwaters of >2ha.</p> <p>Great crested grebe require one or more freshwaters of >1ha.</p> <p>Methodology for assessing target to be determined.</p>



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cSAC: The Broads
SPA: Broadland
Component SSSI: Smallburgh Fen

Conservation objectives for the European Interest on the SSSI

The conservation objectives for the European interest on the SSSI are:

to maintain*, in favourable condition, the:

- Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior*.
- Alkaline fens

to maintain*, in favourable condition, the habitats for the population of:

- Otter (*Lutra lutra*).

to maintain*, in favourable condition, the habitats for the populations of Annex1 bird species⁺ of European importance with particular reference to:

- fen and fen meadow.

+Marsh harrier, Hen harrier.

* maintenance implies restoration if the feature is not currently in favourable condition.

The Conservation Objectives for The Broads candidate Special Area of Conservation and Broadland Special Protection Area are, in accordance with para C 10 of PPG 9, the reasons for which the cSAC was designated and the SPA classified. The entry of 30 January 1996 on the Register of European Sites gives the reasons for which the SPA was classified.

The **Broads cSAC** and **Broadland SPA** includes land within: Alderfen Broad SSSI, Ant Broads and Marshes SSSI, Barnby Broad and Marshes SSSI, Broad Fen, Dilham SSSI, Bure Broads and Marshes SSSI, Burgh Common and Muckfleet Marshes SSSI, Calthorpe Broad SSSI, Cantley Marshes SSSI, Crostwick Marsh SSSI, Decoy Carr, Acle SSSI, Ducan's

Marsh, Claxton SSSI, Geldeston Meadows SSSI, Hall Farm Fen, Hemsby SSSI, Halvergate Marshes SSSI, Hardley Flood SSSI, Limpenhoe Meadows SSSI, Ludham-Potter Heigham Marshes SSSI, Poplar Farm Meadows, Langley SSSI, Priory Meadows, Hickling SSSI, Shallam Dyke Marshes, Thurne SSSI, Smallburgh Fen SSSI, Sprat's Water and Marshes, Carlton Colville SSSI, Stanley and Alder Carrs, Aldeby SSSI, Upper Thurne Broads and Marshes SSSI, Upton Broads and Marshes SSSI and Yare Broads and Marshes SSSI.

The **Broads cSAC** additionally includes land within: Damgate Marshes, Acle SSSI and Trinity Broads SSSI.

Favourable Condition Table for Smallburgh Fen SSSI

The Favourable Condition Table will be used by English Nature and other relevant authorities to determine if a site is in favourable condition. Favourable condition is achieved when the targets given below are met.

The favourable condition table should inform the scope and nature of any ‘appropriate assessment’ under the Habitats Regulations, but an appropriate assessment will also require consideration of issues specific to the individual plan or project. The favourable condition table does not by itself provide a comprehensive basis on which to assess plans and projects as required under Regulations 20-21, 24, 48-50 and 54 - 85. The scope and content of an appropriate assessment will depend upon the location, size and significance of the proposed project. English Nature will advise on a case by case basis.

Following an appropriate assessment, competent authorities are required to ascertain the effect on the integrity of the site. The integrity of the site is defined in para C10 of PPG9 as the coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified. The determination of favourable condition is separate from the judgement of effect upon integrity. For example, there may be a time-lag between a plan or project being initiated and a consequent adverse effect upon integrity becoming manifest in the condition assessment. In such cases, a plan or project may have an adverse effect upon integrity even though the site remains in favourable condition.

Annual counts for qualifying bird species will be used by English Nature, in the context of five year peak means, together with available information on UK population and distribution trends, to assess whether the SPA is continuing to make an appropriate contribution to the Favourable Conservation Status of the species across Europe.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Alkaline fens. Spring and seepage-fed chalk-rich alkaline valley fen	M13 black bog rush - blunt flowered rush <i>Schoenus nigricans</i> - <i>Juncus subnodulosus</i> fen.	Extent	Area (ha), measured periodically.	Maintain type and extent of NVC communities which are optimal for the interest feature. No significant decrease from reference level.	Map extent and position of main NVC communities, monitor every 5 years. Reference level to be determined.
		Water quantity and quality	High piezometric head and permanently high water table (allowing for natural seasonal fluctuations) The spring water has low fertility and is very rich in base ions.	Summer water levels at fen surface throughout the year. No reduction in the extent of influence of seepage or spring head. No standing water. Maintain surface drainage to prevent buildup of surface waters.	Reduction in piezometric head could affect both water table and extent of the vegetation. Standing water is considered a negative indicator. Set up dipwells and record at least monthly during the summer.
		Water quality	Base rich, low fertility supply to vegetation	Maintain groundwater and other base rich-low nutrient water sources to the vegetation. No increase in surface and river waters inputs into M13 vegetation.	These communities can be adversely affected by nutrient enrichment. Surface and river water quality are critically important.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
				Establish target base and NPK concentration and monitor annually.	It is important that irrigating waters are free from excessive plant nutrients. Carry out water analysis for basic ions and for NPK every 5 years. Reference level to be determined
		Vegetation structure	Presence of varied sward structure with full range of vegetation heights, from close cropped to tall. Includes varying degrees of tussock height. Always includes elements of short pioneer fen vegetation	At height of summer (July August), fen vegetation to be typically no more than 0.5 metres tall, with random mosaic of differing vegetation and tussock heights across whole fen area.	If vegetation is managed by mowing, damage to tussock structure must be avoided.
		Vegetation composition	Floristic quality of <i>Schoenus nigricans</i> - <i>Juncus subnodulosus</i> mire (M13) through the abundance of 'typical' species	Within the area occupied by target communities, the eponymous species and others of constancy V or IV should be abundant.	Monitor every five years.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
			Number of characteristic M13 species.	Retain more than 24 species characteristic of M13	Monitor every five years.
			Combined cover of <i>Carex</i> spp., <i>Eriophorum</i> spp., <i>Juncus subnodulosus</i> , <i>Schoenus nigricans</i> , brown / pleurocarpus mosses and positive indicators listed below	At least 75%	
			Frequency of brown / pleurocarpus mosses (DAFOR scale)	At least frequent throughout the flush	

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
			Frequency of positive indicators (DAFOR scale): <i>Anagallis tenella</i> , <i>Caltha palustris</i> , <i>Centaurea nigra</i> , <i>Dactylorhiza</i> spp., <i>Epipactis palustris</i> , <i>Filipendula ulmaria</i> , <i>Galium uliginosum</i> , <i>Hydrocotyle vulgaris</i> , <i>Lotus uliginosus</i> , <i>Lychnis flos-cuculi</i> , <i>Lythrum salicaria</i> , <i>Mentha aquatica</i> , <i>Parnassia palustris</i> , <i>Pedicularis</i> spp., <i>Pinguicula vulgaris</i> , <i>Succisa pratensis</i> , <i>Valeriana dioica</i> , <i>Vicia cracca</i>	At least three species frequent and three species occasional throughout. No species forming dominant stands over more than 20% of the flush	
			Frequency of negative indicators using DAFOR scale: <i>Deschampsia cespitosa</i> , <i>Holcus lanatus</i> , <i>Juncus acutiflorus</i> , <i>J. effusus</i>	No more than two species frequent throughout the sward, no species abundant	

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
			Frequency of negative indicators using DAFOR scale: <i>Cirsium arvense</i> , <i>Cirsium vulgare</i> , <i>Urtica dioica</i>	No more than rare	
			Frequency or cover of tree / scrub spp.	No tree or scrub cover on seepage/low-growing zone.	
		Sward structure	Extent of bare mud / peat visible without disturbing vegetation	No more than 15%	Exclude stones, gravel and tufa
			Frequency of <i>Molinia caerulea</i> tussocks	No more than occasional	
			Cover of litter in a more or less continuous layer	Total extent no more than 10% of the mire area	Litter may be distributed in patches or in one larger area
			Average vegetation height	In range 15 - 50cm	
		Rare species	Maintain or enhance populations of special or rare plant (and animal) species	Species to be determined.	Identify special species and seek guidance in defining measures. Reference levels to be determined.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i>, <i>Alnion incanae</i>, <i>Salicion alvae</i>) Semi-natural woodland	NVC type W5 and W6	Extent	Extent/location of stands	No loss of ancient semi-natural stands At least current area of recent semi-natural stands maintained, although their location may alter. At least the area of ancient woodland retained	* Stand loss due to natural processes eg in minimum intervention stands may be acceptable. * A high proportion of this type of woodland may be recent and hence a dynamic interchange with open wet communities may occur. * Stand destruction may occur if the understorey and ground flora are irretrievably damaged even if the canopy remains intact. * Loss = 0.5 ha or 0.5% of the stand area, whichever is the smaller. * 20% canopy cover is conventionally taken as the lower limit for an area to be considered as woodland. Stands of willow scrub may pose difficulties of definition. * Area and location of stands may be assessed remotely or by site visit.
		2. Natural processes and structural development	Age/size class variation within and between stands; presence of open space and old trees; dead wood lying on the ground; standing dead trees	* At least the current level of structural diversity maintained. * Understorey (2-5m) present over at least 20% of total stand area * Ground flora present over at least 50% of area excluding temporary pool areas * Canopy cover present	* Any changes leading to exceedance of these limits due to natural processes are likely to be acceptable. * There is generally a good structural variety in these stands although veteran trees may be under-represented because of past treatment and the unstable nature of some sites. * The ground flora may appear sparse, particularly where periodic flooding leaves areas of bare mud etc. Its composition may be variable (see attribute 5).

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
				<p>over 30-90 % of stand area</p> <p>* Age class structure appropriate to the site, its history and management.</p> <p>* A minimum of 3 fallen lying trees or major branches per ha and 4 trees per ha allowed to die standing.</p> <p>Structures associated with the hydrological regime also need to be considered.</p> <p>* At least the current level of natural hydrological features should be maintained (channels, pools, periodic flooding)</p>	<p>* In coppiced stands a lower canopy cover (of standards) can be accepted.</p> <p>* See JNCC guidance note for the sorts of age structure likely to be appropriate for different types of management regime.</p> <p>* Dead wood is often abundant but because there tend to be fewer big trees the size of the fallen wood is often small. Flooding may lead to local accumulations with other areas totally lacking fallen wood.</p> <p>* Assess this attribute by field survey.</p> <p>* Where possible the hydrological regime should be allowed to revert to a more natural state.</p>

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		3.Regeneration potential	Successful establishment of young stems in gaps or on the edge of a stand	<p>* Signs of seedlings growing through to saplings to young trees at sufficient density to maintain canopy density over a 10 yr period (or equivalent regrowth from coppice stumps).</p> <p>* No planting in stands.</p>	<p>* A proportion of gaps at any one time may develop into permanent open space; equally some current permanent open space/glades may in time regenerate to closed canopy.</p> <p>* Regeneration may often occur on the edges of stands rather than in gaps within it.</p> <p>* In coppice most of the regeneration will be as stump regrowth. See JNCC Guidance Note on likely desirable levels of regeneration.</p> <p>* The minimum level of regeneration to be acceptable from a nature conservation viewpoint is likely to be much less than that needed where wood production is also an objective.</p> <p>* Assess this attribute by walking through the wood in spring/summer.</p>

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		4. Composition	Cover of native versus non-native species (all layers) Death, destruction or replacement of native woodland species through effects of non-native fauna or external unnatural factors	<p>* At least the current level of site-native species maintained.</p> <p>* At least 90% of cover in any one layer of site-native or acceptable naturalised species.</p> <p>* Death, destruction or replacement of native woodland species through effects of introduced fauna or other external unnatural factors not more than 10% by number or area in a five year period.</p>	<p>* In sites where there might be uncertainty as to what counts as site-native or as an acceptable naturalised species this must be made clear (eg the position of poplar).</p> <p>* Where cover in any one layer is less than 100% then the 90% target applies to the area actually covered by that layer.</p> <p>* Factors leading to the death or replacement of woodland species could include pollution, including eutrophication from adjacent farmland; new diseases (eg alder dieback).</p> <p>* Damage to species by non-native species that does not lead to their death or replacement by non-woodland species (eg damage from squirrels to trees that non-the -less survive) is not necessarily unacceptable in nature conservation terms.</p> <p>* Excessive browsing/grazing by even native ungulates may be considered an unnatural external factor where it leads to undesirable shifts in the composition/structure of the stand, although this may be picked up by attributes 2 or 5 anyway.</p> <p>* Assess this attribute by a walk through the site.</p>

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		5. Species, habitats, structures characteristic of the site.	Ground flora type Distinctive and desirable elements for a given site eg. locally uncommon species such as <i>Carex elata</i> ; veteran trees or rich invertebrate assemblages. Patches of associated habitats and transitions eg to ash wood, open fen and open water	* 80% of ground flora cover referable to NVC wet woodland community (W 5 and W6) * Distinctive elements maintained at current levels and in current locations (where appropriate). * Patches and transitions maintained in extent and where appropriate location.	* Changes leading to these targets not being met may be acceptable where this is due to natural processes. * Distinctive elements and patches should be marked on maps for ease of checking in the field wherever possible. * If there are species groups/assemblages that cannot be assessed directly on a general site visit then surrogate features should be given where possible, eg dead wood concentrations for associated invertebrates.
River	Otter <i>Lutra lutra</i>	Water quality	EA scale	"Good", with no pollution incidents	Refer to Environment Agency for data
		Flow rate	Mean annual flow rate	No reduction attributable to increased abstraction.	Data from Environment Agency
		Site integrity	Total area	No reduction of fragmentation of area	

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		Fish stocks	EA assessment	Fish stocks appropriate to the nutrient status of the river No significant decline in fish biomass or species diversity	Refer to Environment Agency for sample data
		Disturbance	Extent of public access to river	No significant change to river or bankside usage; no significant development	
		Bankside cover	Proportion of bank lined with trees, scrub or other thick cover	No overall permanent decrease	Some change acceptable as long as it is appropriately mitigated
		Presence of otters	Signs of otters	Signs of otters found at least once per year	Use data from national or county surveys
All habitats: Fen, Fen meadow.	Annex 1 species of European importance.	Extent of habitat.	Area (ha), measured periodically (frequency to be determined).	No significant decrease from reference level.	For all habitats for all qualifying species. Methodology for assessing target to be determined. Reference level to be determined.
		Disturbance in roosting and feeding areas	Reduction or displacement of birds, measured periodically (frequency to be determined).	No significant displacement of birds attributable to human disturbance in relation to reference level.	All qualifying breeding and wintering annex 1 species. Methodology for assessing target to be determined. Reference level to be determined.
All habitats: Fen, Fen meadow.	Annex 1 species of European importance.	Food Availability	Abundance of live mammals and birds, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of food species year round in relation to reference level.	Small-medium sized mammals (voles, mice, rabbits) and birds (pipits to ducks) are important prey in the breeding season for marsh harriers and during the winter for hen harriers. Methodology for assessing target to be determined. Reference level to be determined.



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cSAC: Norfolk Valley Fens Component SSSI: Sheringham and Beeston Commons

Conservation objective for the European Interest on the SSSI

The conservation objectives for the European interests on the SSSI are:

to maintain*, in favourable condition, the:

- Alkaline fens
- *Molinia* meadows on chalk, peat, clay or silt silt-laden soils (*Molinia caeruleae*)

* maintenance implies restoration if the feature is not currently in favourable condition.

The Conservation Objectives for Norfolk Valley Fens candidate Special Area of Conservation are, in accordance with para C10 of PPG 9, the reasons for which the cSAC was designated. The cSAC also includes land within Badley Moor, Dereham SSSI, Booton Common SSSI, Buxton Heath SSSI, Coston Fen, Runhall SSSI, East Walton and Adcock's Common SSSI, Flordon Common SSSI, Foulden Common SSSI, Great Cressingham Fen SSSI, Holt Lowes SSSI, Potter and Scarning Fens SSSI, Southrepps Common SSSI, Swangey Fen, Attleborough SSSI and Thompson Water, Carr and Common SSSI.

The favourable condition table will be used by English Nature to determine favourable condition and other relevant authorities to determine if a site is in favourable condition. Favourable condition is achieved when the targets set out below are met.

The favourable condition table should inform the scope and nature of any ‘appropriate assessment’ under the Habitats Regulations, but an appropriate assessment will also require consideration of issues specific to the individual plan or project. The favourable condition table does not by itself provide a comprehensive basis on which to assess plans or projects as required under Regulations 20-21, 24, 48-50 and 54-85. The scope and content of an appropriate assessment will depend upon the location, size and significance of the proposed project. English Nature will advise on a case by case basis.

Following an appropriate assessment, competent authorities are required to ascertain the effect on the integrity of the site. The integrity of the site is defined in para. C10 of PPG9 as ‘the coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified. The determination of favourable condition is separate from the judgement of effect upon integrity. For example, there may be a time lag between a plan or project being initiated and a consequent adverse effect upon integrity being manifest in the condition assessment. In such cases, a plan or project may have an adverse effect upon integrity even though the site remains in favourable condition.

Operational	Criteria feature	Attributes	Measures	Targets	Comments
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feature					
Spring and seepage-fed chalk-rich alkaline valley fen	M13 black bog rush - blunt flowered rush <i>Schoenus nigricans</i> - <i>Juncus subnodulosus</i> fen.	Extent	Extent identified in Norfolk Valley Fen NVC survey (Smart 1992-93)	Maintain as an absolute minimum baseline the overall area and extent identified by Smart (1992-93).	Extent of fen communities may be subject to some natural dynamic variation, in response to extensive grazing pressure.
		Water quantity and quality	High piezometric head and permanently high water table (allowing for natural seasonal fluctuations) The spring water has low fertility and is rich in base ions.	Summer water levels (July-September) to fall no more than 10 cm below the surface.	
		Vegetation structure	Presence of varied sward structure with full range of vegetation heights, from close cropped to tall and unglazed. Includes varying degrees of tussock height. Always includes pioneer fen vegetation	At height of summer (July August), fen vegetation to be typically no more than 0.5 metres tall, with random mosaic of differing vegetation and tussock heights across whole fen area.	As with extent, likely to be influenced by grazing regime, with vegetation responding to variable grazing pressure over time.
		Vegetation composition	Brown moss <i>Sphagnum spp.</i> carpets List A: <i>Schoenus nigricans</i> <i>Juncus subnodulosus</i> List B: <i>Pinguicula vulgaris</i> <i>Parnassia palustris</i> <i>Anagallis tenella</i> <i>Epipactis palustris</i> <i>Gymnodenia canopse</i>	Low growing brown moss carpets to occupy between 5 and 15% of overall fen area. Both species in list A to be at least frequent. All species in list B to be at least occasional.	
Operational feature	Criteria feature	Attributes	Measures	Targets	Comments
		Negative indicators	<i>Phragmites australis</i> <i>Urtica dioica</i> <i>Salix cinerea</i> <i>Epilobium hirsutum</i> <i>Eupatorium cannabinum</i> <i>Fillipendula ulmaria</i>	Clumps of <i>Salix cinerea</i> to occupy no more than 5% of the overall fen area. All other species listed to be no more than rare in the overall fen area.	
Purple moor	M24 purple moor	Extent	Extent identified in Norfolk	Maintain as an absolute	Extent of fen communities

grass mire	grass - meadow thistle <i>Molinia caerulea</i> - <i>Cirsium dissectum</i> fen meadow		Valley Fen NVC survey (Smart 1992-93)	minimum baseline the overall area and extent identified by by Smart (1992-93).	may be subject to some natural dynamic variation, in response to extensive grazing pressure
		Sward composition: positive indicator species	The frequency of positive indicator species from the list below to give an overall total of 2 frequent and 3 occasional. <i>Anagallis tenella, Angelica sylvestris, Cirsium dissectum, Erica tetralix, Eupatorium cannabinum, Filipendula ulmaria, Galium uliginosum/ Galium palustre, Lotus pedunculatus, Orchidaceae spp., Pedicularis sylvatica, Potentilla erecta, sedges (C. flacca, C.nigra,C.panicea), Sphagnum spp., Succisa pratensis, Valeriana dioica, Viola palustris.</i>	Overall total of at least two species/taxare frequent plus at least three species/taxa are occasional throughout the sward. <i>Eupatorium cannabinum, Angelica sylvestris and Fillipendula ulmaria</i> should be no more than occasional.	Choice of species related to NVC types, restriction to unimproved grassland and wetness characteristics of habitat, all satisfactory when inside target. Among possible species that could be used, choice further restricted by ease of identification, visibility in recording period.
		Sward composition: frequency and cover of <i>Molinia caerulea</i>	Record the frequency and % cover of <i>Molinia caerulea</i> . Record in period early June - end of August.	At least frequent throughout the sward but no more than 80% cover	<i>Molinia</i> is characteristic of the community and should be at least frequent. However, increasing cover exceeding upper target is indicative of insufficient management by grazing or cutting.
Operational feature	Criteria feature	Attributes	Measures	Targets	Comments
		*Sward composition: cover of <i>Juncus</i> spp	Record the % cover of <i>Juncus</i> species from groups A and B. Record in period early June - end of August. Group A: jointed rushes (<i>Juncus acutiflorus, J. articulatus, J. subnodulosus</i>) Group B: <i>Juncus conglomeratus, J. effusus and J.</i>	All species combined no more than 80% cover, of which no more than 50% made up of spp. from Group B	<i>Juncus</i> spp can be characteristic components of the communities. However, increasing cover is indicative of insufficient management by grazing or cutting and/or waterlogging. Group B species may indicate problems of eutrophication when

			<i>inflexus.</i>		outside target .
		*Sward composition: negative indicator species.	Record the % cover of negative indicator species. Record in period early June - end of August. <i>Cirsium palustre.</i> <i>Deschampsia cespitosa</i> <i>Phragmites australis</i> <i>Salix cinerea</i> <i>Cirsium vulgare</i>		Invasive species outside targets shows that habitat is not being managed sufficiently eg lack of or insufficient grazing/cutting
		Sward structure: average height	Sward height in period early June - end of August. (Upper target refers to pastures only.)	M24a Sward 5 cm or greater (excluding <i>Juncus</i> spp.) but no more than 25% over 60 cm M24b, M24c Sward 2 cm or greater (excluding <i>Juncus</i> spp.) but no more than 25% over 15 cm	Sward height above upper target shows that habitat is not being managed sufficiently eg lack of or insufficient grazing or if below lower target, is being overgrazed.
		Sward structure: litter	Cover of litter where in a more or less continuous layer, distributed either in patches or in one larger area. Record in period early June - end of August for pastures.	Total extent no more than 20% of the sward	Outside target indicates biomass removal is insufficient eg lack of or insufficient grazing or not cut for hay.
Operational feature	Criteria feature	Attributes	Measures	Targets	Comments
		Sward structure: bare ground	Extent of bare ground distributed through the sward, visible without disturbing the vegetation. Record in period early June - end of August.	No more than 5%	Outside target indicates problems with stock management eg poaching, supplementary feeding.



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cSAC: The Broads
SPA: Broadland
Component SSSI: Shallam Dyke Marshes, Thurne

Conservation objectives for the European Interest on the SSSI

The conservation objectives for the European interest on the SSSI are:

to maintain*, in favourable condition, the:

- Natural eutrophic lakes with *Magnopotamion* or *Hydrocharition*-type vegetation.

to maintain*, in favourable condition, the habitats for the population of:

- Otter (*Lutra lutra*).

to maintain*, in favourable condition, the habitats for the populations of Annex1 bird species⁺ of European importance with particular reference to:

- lowland wet grassland with ditches and water bodies.

+ Marsh harrier, Hen harrier, Bewick's swan, Whooper swan and Ruff.

to maintain*, in favourable condition, the habitats for the populations of migratory bird species⁺ of European importance with particular reference to:

- lowland wet grassland with ditches and water bodies.

+Gadwall and Shoveler.

to maintain*, in favourable condition, the habitats of the populations of waterfowl that contribute to the wintering waterfowl assemblage of European importance with particular reference to,

- lowland wet grassland with ditches and water bodies.

* maintenance implies restoration if the feature is not currently in favourable condition.

The Conservation Objectives for The Broads candidate Special Area of Conservation and Broadland Special Protection Area are, in accordance with para C 10 of PPG 9, the reasons for which the cSAC was designated and the SPA classified. The entry of 30 January 1996 on the Register of European Sites gives the reasons for which the SPA was classified.

The **Broads cSAC** and **Broadland SPA** includes land within: Alderfen Broad SSSI, Ant Broads and Marshes SSSI, Barnby Broad and Marshes SSSI, Broad Fen, Dilham SSSI, Bure Broads and Marshes SSSI, Burgh Common and Muckfleet Marshes SSSI, Calthorpe Broad SSSI, Cantley Marshes SSSI, Crostwick Marsh SSSI, Decoy Carr, Acle SSSI, Ducan's Marsh, Claxton SSSI, Geldeston Meadows SSSI, Hall Farm Fen, Hemsby SSSI, Halvergate Marshes SSSI, Hardley Flood SSSI, Limpenhoe Meadows SSSI, Ludham-Potter Heigham Marshes SSSI, Poplar Farm Meadows, Langley SSSI, Priory Meadows, Hickling SSSI, Shallam Dyke Marshes, Thurne SSSI, Smallburgh Fen SSSI, Sprat's Water and Marshes, Carlton Colville SSSI, Stanley and Alder Carrs, Aldeby SSSI, Upper Thurne Broads and Marshes SSSI, Upton Broads and Marshes SSSI and Yare Broads and Marshes SSSI.

The **Broads cSAC** additionally includes land within: Damgate Marshes, Acle SSSI and Trinity Broads SSSI.

Favourable Condition Table for Shallam Dyke Marshes, Thurne SSSI

The Favourable Condition Table will be used by English Nature and other relevant authorities to determine if a site is in favourable condition. Favourable condition is achieved when the targets given below are met.

The favourable condition table should inform the scope and nature of any 'appropriate assessment' under the Habitats Regulations, but an appropriate assessment will also require consideration of issues specific to the individual plan or project. The favourable condition table does not by itself provide a comprehensive basis on which to assess plans and projects as required under Regulations 20-21, 24, 48-50 and 54 - 85. The scope and content of an appropriate assessment will depend upon the location, size and significance of the proposed project. English Nature will advise on a case by case basis.

Following an appropriate assessment, competent authorities are required to ascertain the effect on the integrity of the site. The integrity of the site is defined in para C10 of PPG9 as the coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified. The determination of favourable condition is separate from the judgement of effect upon integrity. For example, there may be a time-lag between a plan or project being initiated and a consequent adverse effect upon integrity becoming manifest in the condition assessment. In such cases, a plan or project may have an adverse effect upon integrity even though the site remains in favourable condition.

Annual counts for qualifying bird species will be used by English Nature, in the context of five year peak means, together with available information on UK population and distribution trends, to assess whether the SPA is continuing to make an appropriate contribution to the Favourable Conservation Status of the species across Europe.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
22.13 Natural eutrophic lakes with Magnopotamion or Hydrocharition type vegetation. Standing water-ditch system	NVC types: A3 A9 A13 A4 Types '7', '8', '9' and '10' of the GB Standing Water Classification.	Extent of community.	Check extent of beds in July/August every 4 years.	Extensive beds of submerged macrophytes should be present. Maintain mixed community.	Submerged vegetation characterised by broad leaved <i>Potamogeton</i> species such as <i>Potamogeton perfoliatus</i> , <i>P lucens</i> , <i>P crispus</i> , <i>P natans</i> , <i>P x salicifolius</i> , <i>P coloratus</i> , <i>P polygonifolius</i> , <i>P gramineus</i> , <i>P. alpinus</i> and <i>Hydrocharition</i> type vegetation. <i>Hydrocharis morsus-ranae</i> is a very rare associate with the <i>Magnopotamion</i> in the UK. Its community components are present, however, mainly <i>Spirodela polyrhiza</i> , <i>Lemna minor</i> , <i>Hippuris vulgaris</i> , <i>Utricularia vulgaris</i> and <i>Apium inundatum</i> . Community should be mixed and no one species should be present above 40% level of total amount of macrophyte presence.
		Extent of <i>Potamogeton</i> species <i>Magnopotamion</i> .	Check species presence in July/August every 4 years.	Maintain species presence of all <i>Magnopotamion</i> and fine leaved <i>Potamogetons</i> .	No one <i>Potamogeton</i> species should be present above 40% level of total amount or level of macrophyte presence (see Water Quality comment).
		Extent of nationally scarce or threatened species.	Establish population size and position of nationally scarce, rare or threatened species over a period of 3 years, on a quarterly basis; thereafter every two years in July/August.	Maintain presence of all nationally scarce, rare or threatened plant species.	Nationally scarce, rare or threatened species can vary in population size and extent due to temporal/seasonal changes in climate which affects physical variables such as water temperature.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		Water quality	Arrange for analysis of quarterly measurements of Total P for first three years; thereafter annually in July/August.	Maintain water quality particularly Total P levels. For southern systems 100 $\mu\text{g l}^{-1}$ or below, down to 65 $\mu\text{g l}^{-1}$.	The variable targets for Total P reflects the geographical range of this trophic state. The target for Total P should be set for individual SAC's and an acceptable range established. Increases in Total P suggest a need to move from annual July/August check, back to more intensive quarterly samples to verify whether change is real. Also check for cover shifts of macrophytes and dominant presence of pollution tolerant species above 40% level such as <i>Potamogeton pectinatus</i> , <i>Myriophyllum spicatum</i> and/or <i>Ceratophyllum demersum</i> .
		Water quantity	Check ditch levels during July/August.	Maintain hydrology of ditch system.	Hydrology involves not only ditch levels but flushing rates; prevent lowering or raising of ditch level through modification of outfalls. With ditch systems aim for constant high water table throughout the year Water abstraction may represent a significant issue through the reduction of ground water and flushing flows into marginal ditch systems.
		Sediment	Check for excessive growths of individual macrophytes ie above 40%.	Maintain sediment quality and quantity.	Effects of increased macrophyte growth also relates to water quality; if this is at target levels, then enrichment of sediments is an issue if broad leaved <i>Potamogeton</i> species decline and fine leaved <i>Potamogeton pectinatus</i> increases above 40% level or <i>Myriophyllum spicatum</i> / <i>Ceratophyllum demersum</i> become dominant. Introduced fish might through sediment disturbance move sites out of favourable condition. Check for increases in siltation from catchment use changes or changes in sewage treatment.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Water bodies	Otter <i>Lutra lutra</i>	Water quality	EA scale	"Good", with no pollution incidents	Refer to Environment Agency for data
		Flow rate	Mean annual flow rate	No reduction attributable to increased abstraction.	Data from Environment Agency
		Site integrity	Total area	No reduction of fragmentation of area	
		Fish stocks	EA assessment	Fish stocks appropriate to the nutrient status of the broad. No significant decline in fish biomass or species diversity	Refer to Environment Agency for sample data
		Disturbance	Extent of public access to river	No significant change to river or bankside usage; no significant development	
		Bankside cover	Proportion of bank lined with trees, scrub or other thick cover	No overall permanent decrease	Some change acceptable as long as it is appropriately mitigated
		Presence of otters	Signs of otters	Signs of otters found at least once per year	Use data from national or county surveys
All habitats: Grassland Improved, Standing Water	Annex 1 species of European importance and waterfowl assemblage including migratory species of European and national importance.	Extent of habitat.	Area (ha), measured periodically (frequency to be determined).	No significant decrease from reference level.	For all habitats for all qualifying species. Methodology for assessing target to be determined. Reference level to be determined.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		Disturbance in roosting and feeding areas	Reduction or displacement of birds, measured periodically (frequency to be determined).	No significant displacement of birds attributable to human disturbance in relation to reference level.	All qualifying breeding and wintering annex 1 and migratory species. Methodology for assessing target to be determined. Reference level to be determined.
All habitats: Grassland Improved, Standing Water	Annex 1 species of European importance.	Food Availability	Abundance of live mammals and birds, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of food species year round in relation to reference level.	Small-medium sized mammals (voles, mice, rabbits) and birds (pipits to ducks) are important prey in the breeding season for marsh harriers and during the winter for hen harriers. Methodology for assessing target to be determined. Reference level to be determined.
Grassland Improved	Annex 1 species of European importance.	Absence of obstruction to viewlines	Open terrain relatively free of obstructions (feeding, anti-predator, roosting), measured periodically (frequency to be determined).	No significant reduction in view-lines in feeding and roosting areas during the winter season.	Bewick's swan and whooper swan prefer unrestricted views over 500 metres. Ruff prefer unrestricted views over 200 metres. Methodology for assessing target to be determined.
Grassland Improved	Annex 1 species of European importance.	Food Availability	Presence and abundance of soil and ground surface invertebrates, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of prey species during the winter season in relation to reference level.	Dipteran flies, beetles and earthworms are important for Ruff. Methodology for assessing target to be determined. Reference level to be determined.
Grassland Improved	Annex 1 species of European importance.	Food availability	Presence and abundance of soft leaved plants, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of food species during the winter season in relation to reference level.	<i>Lolium perenne</i> , <i>Glyceria fluitans</i> , <i>Phleum pratense</i> , <i>Rorippa amphibia</i> , <i>Alopecurus geniculatus</i> for Bewick's swan and whooper swan. Methodology for assessing target to be determined. Reference level to be determined.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Grassland Improved	Annex 1 species of European importance.	Vegetation characteristics	Predominantly short grassland swards (feeding and roosting during the winter period), measured periodically (frequency to be determined).	Vegetation height throughout areas used for feeding and roosting during the winter season should not deviate significantly.	Bewick's swan and whooper swan require a sward height <10 cm within feeding areas during the winter season. Ruff require a vegetation height of <10cm within roosting areas during the winter season. Methodology for assessing target to be determined.
Grassland Improved	Annex 1 species of European importance.	Hydrology/ Flow	Wet fields with surface pools, measured periodically (frequency to be determined).	No significant reduction in soggy or flooded areas during the winter season.	Bewick's swan require 25-50% of the area soggy or flooded. Ruff also prefer permanently wet and flooded areas with a water depth of <3 cm. Methodology for assessing target to be determined.
Standing Water	Annex 1 species of European importance and migratory species of European and national importance.	Food Availability	Presence and abundance of aquatic plants, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of food species during the winter season in relation to reference level.	<i>Potamogeton, Ceratophyllum, Zannichellia, Myriophyllum, Ranunculus and Chara spp.</i> for Bewick's and whooper swan. <i>Glyceria fluitans, Agrostis stolonifera, Chara, Potamogeton and Ceratophyllum spp</i> for gadwall. <i>Scirpus, Eleocharis, Carex, Potamogeton and Glyceria</i> for shoveler. <i>Chara, Nitella and Potamogeton spp.</i> are important for tufted duck. <i>Chara, Cladophora, Potamogeton, Ruppia, Ranunculus and Elodea</i> are important for Coot. Methodology for assessing target to be determined. Reference level to be determined.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Standing Water	Nationally important migratory species.	Food Availability	Presence and abundance of seed bearing plants, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of food species during the winter season in relation to reference level.	<i>Polygonum, Eleocharis, Rumex</i> and <i>Ranunculus</i> are important for Teal. Methodology for assessing target to be determined. Reference level to be determined.
Standing Water	Migratory species of European and national importance.	Food availability	Presence and abundance of aquatic invertebrates, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of prey species during the winter season in relation to reference level.	Hydrobia, crustaceans, caddisflies, diptera and beetles are important for shoveler. Hydrobia, flies, caddisfly, beetles and bugs are important for teal. Methodology for assessing target to be determined. Reference level to be determined.
Standing Water	Nationally important migratory species.	Food availability	Presence and abundance benthic invertebrates, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of prey species during the winter season in relation to reference level.	<i>Dreissena polymorpha</i> , chironomid larvae, <i>Gammarus</i> and <i>Hydrobia</i> are important for tufted duck. Methodology for assessing target to be determined. Reference level to be determined.
Standing Water	Nationally important migratory species.	Food availability	Presence and abundance of surface and benthic invertebrates, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of prey species during the winter season in relation to reference level.	<i>Mytilus</i> , <i>Dreissena polymorpha</i> and caddis-fly larvae are important for coot. Methodology for assessing target to be determined. Reference level to be determined.
Standing Water	Nationally important migratory species.	Food availability	Presence and abundance of fish, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of prey species during the winter season in relation to reference level.	Fish of 10-25 cm are important for cormorant. Methodology for assessing target to be determined. Reference level to be determined.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Standing Water	Annex 1 species of European importance and migratory species of European and national importance.	Water depth	Areas of shallow medium and deep water (feeding), measured periodically (frequency to be determined).	Water depths should not deviate significantly during the winter season.	<p>Cormorant require a water depth of 2-10m.</p> <p>Bewick's and whooper swan require a water depth of <1m.</p> <p>Gadwall require a water depth of <25cm. A kleptoparasitic relationship with Coot can allow Gadwall to potentially exploit deeper areas up to 2m in depth.</p> <p>Shoveler and teal require a water depth of <30cm.</p> <p>Coot require a water depth of 0.5-2m.</p> <p>Tufted duck require a water depth of 2-5m.</p> <p>Methodology for assessing target to be determined.</p>
Standing Water	Annex 1 species of European importance and migratory species of national importance.	Water area	Large open areas of water(feeding, roosting), measured periodically (frequency to be determined).	No significant reduction in the area of open water for feeding and roosting during the winter season.	<p>Cormorant require one or more fresh waters of >20ha.</p> <p>Bewick's and whooper swan require one or more fresh waters of >10ha.</p> <p>Tufted duck require one or more freshwaters of >5ha.</p> <p>Coot require one or more freshwaters of >2ha.</p> <p>Methodology for assessing target to be determined.</p>
Standing Water	Annex 1 species of European importance.	Hydrology/ Flow	Fluctuating water levels, measured periodically (frequency to be determined).	Range of water level fluctuation providing a succession of surface water areas (feeding) during the winter season.	<p>Ideally Bewick's and whooper swan require water levels fluctating by 5-15% per month.</p> <p>Methodology for assessing target to be determined.</p>



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cSAC: Norfolk Valley Fens Component SSSI: Potter and Scarning Fens

Conservation objective for the European Interest on the SSSI

The conservation objectives for the European interests on the SSSI are:

to maintain*, in favourable condition, the:

- Alkaline fens

* maintenance implies restoration if the feature is not currently in favourable condition.

The Conservation Objectives for Norfolk Valley Fens candidate Special Area of Conservation are, in accordance with para C10 of PPG 9, the reasons for which the cSAC was designated. The cSAC also includes land within Badley Moor, Dereham SSSI, Booton Common SSSI, Buxton Heath SSSI, Coston Fen, Runhall SSSI, East Walton and Adcock's Common SSSI, Flordon Common SSSI, Foulden Common SSSI, Great Cressingham Fen SSSI, Holt Lowes SSSI, Sheringham and Beeston Regis Common SSSI, Southrepps Common SSSI, Swangey Fen, Attleborough SSSI and Thompson Water, Carr and Common SSSI.

The favourable condition table will be used by English Nature to determine favourable condition and other relevant authorities to determine if a site is in favourable condition. Favourable condition is achieved when when the targets set out below are met.

The favourable condition table should inform the scope and nature of any ‘appropriate assessment’ under the Habitats Regulations, but an appropriate assessment will also require consideration of issues specific to the individual plan or project. The favourable condition table does not by itself provide a comprehensive basis on which to assess plans or projects as required under Regulations 20-21, 24, 48-50 and 54-85. The scope and content of an appropriate assessment will depend upon the location, size and significance of the proposed project. English Nature will advise on a case by case basis.

Following an appropriate assessment, competent authorities are required to ascertain the effect on the integrity of the site. The integrity of the site is defined in para. C10 of PPG9 as ‘the coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified. The determination of favourable condition is separate from the judgement of effect upon integrity. For example, there may be a time lag between a plan or project being initiated and a consequent adverse effect upon integrity being manifest in the condition assessment. In such cases, a plan or project may have an adverse effect upon integrity even though the site remains in favourable condition.

Operational	Criteria feature	Attributes	Measures	Targets	Comments
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feature					
Spring and seepage-fed chalk-rich alkaline valley fen	M13 black bog rush - blunt flowered rush <i>Schoenus nigricans</i> - <i>Juncus subnodulosus</i> fen.	Extent	Maintain current extent as identified by Norfolk Wildlife Trust NVC survey 2000 Extent identified for restoration to fen in Scarning Fen Management Plan 2000-2004	Maintain current extent as an absolute minimum baseline. Eaxpand open chalk rich fen into areas currently occupied by scrub or secondary woodland.	Extent of fen communities may be subject to some natural dynamic variation, in response to extensive grazing pressure.
		Water quantity and quality	High piezometric head and permanently high water table (allowing for natural seasonal fluctuations) The spring water has low fertility and is rich in base ions.	Summer water levels (July-September) to fall no more than 10 cm below the surface.	
		Vegetation structure	Presence of varied sward structure with full range of vegetation heights, from close cropped to tall and ungrazed. Includes varying degrees of tussock height. Always includes elements of short pioneer fen vegetation	At height of summer (July August), fen vegetation to be typically no more than 0.5 metres tall, with random mosaic of differing vegetation and tussock heights across whole fen area.	As with extent, likely to be influenced by grazing regime, with vegetation responding to variable grazing pressure over time.
		Vegetation composition	Brown moss <i>Sphagnum spp.</i> carpets List A: <i>Schoenus nigricans</i> <i>Juncus subnodulosus</i> List B: <i>Pinguicula vulgaris</i> <i>Parnassia palustris</i> <i>Anagallis tenella</i> Orchid species	Low growing brown moss carpets to occupy between 10 and 15% of overall fen area. Both species in list A to be at least frequent. At least two species in list B to be at least occasional.	
Operational feature	Criteria feature	Attributes	Measures	Targets	Comments
		Negative indicators	<i>Phragmites australis</i> <i>Urtica dioica</i> <i>Salix cinerea</i> <i>Epilobium hirsutum</i> <i>Eupatorium cannabinum</i> <i>Fillipendula ulmaria</i>	Clumps of <i>Salix cinerea</i> to occupy no more than 5% of the overall fen area. All other species listed to be no more than rare in the overall M13 fen area.	



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cSAC: Waveney and Little Ouse Valley Fens Component SSSI: Redgrave and Lopham Fens

Conservation Objectives for the European Interest features on the SSSI

The Conservation Objectives for the European interest on the SSSI are:

to maintain*, in favourable condition, the:

- Calcareous fens with *Cladium mariscus* and the species of the *Caricion davallianae*
- *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*)

* maintenance implies restoration if the feature is not currently in favourable condition.

The Conservation Objectives for the Waveney and Little Ouse Valley Fens candidate Special Area of Conservation are, in accordance with para C10 of PPG 9, the reasons for which the cSAC was designated.

The cSAC also includes land within Weston Fen SSSI and Blo’Norton and Thelnetham Fens SSSI.

Favourable Condition Table for Redgrave and Lopham Fens

The Favourable Condition Table will be used by English Nature and other relevant authorities to determine if a site is in favourable condition. Favourable condition is achieved when the targets given below are met.

The favourable condition table should inform the scope and nature of any ‘appropriate assessment’ under the Habitats Regulations, but an appropriate assessment will also require consideration of issues specific to the individual plan or project. The favourable condition table does not by itself provide a comprehensive basis on which to assess plans and projects as required under Regulations 20-21, 24, 48-50 and 54 - 85. The scope and content of an appropriate assessment will depend upon the location, size and significance of the proposed project. English Nature will advise on a case by case basis.

Following an appropriate assessment, competent authorities are required to ascertain the effect on the integrity of the site. The integrity of the site is defined in para C10 of PPG9 as the coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified. The determination of favourable condition is separate from the judgement of effect upon integrity. For example, there may be a time-lag between a plan or project being initiated and a consequent adverse effect upon integrity becoming manifest in the condition assessment. In such cases, a plan or project may have an adverse effect upon integrity even though the site remains in favourable condition.

Calcareous fens with *Cladium mariscus* and the species of the *Caricion davallianae*

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Basin / floodplain mire (E32 / E33)	NVC types S24, S25, S26	Extent	Area (ha)	No loss without prior consent	
		Sward composition	Combined cover of grasses, sedges, rushes and tall herbaceous dicotyledons	At least 75%	
			Frequency of positive indicators (DAFOR scale): <i>Angelica sylvestris</i> , <i>Cirsium arvense</i> , <i>Calliergon cuspidatum</i> , <i>Caltha palustris</i> , <i>Eupatorium cannabinum</i> , <i>Filipendula ulmaria</i> , <i>Iris pseudacorus</i> , <i>Juncus subnodulosus</i> , <i>Lythrum salicaria</i> , <i>Mentha aquatica</i> , <i>Menyanthes trifoliata</i> *, <i>Peucedanum palustre</i> *, <i>Phalaris arundinacea</i> , <i>Valeriana officinalis</i> , <i>Vicia cracca</i> * not identified in the 1983 survey	For S24: At least two species frequent and two species occasional throughout the sward For S25 & S26: At least one species frequent and two species occasional	
			Frequency or cover of <i>Urtica dioica</i>	For S24 & S25: No more than occasional For S26: Is not dominant (forming pure stands) over more than 10% of the mire	
			Frequency of <i>Galium</i>	No more than locally frequent	

			<i>aparine</i> (DAFOR scale)		
			Frequency or cover of tree / scrub spp.	No more than 5% cover, if in discrete stands, or no more than occasional throughout the sward	
		Sward structure †	Litter in a more or less continuous layer	No more than 15cm deep over 50% of area	
Basin / floodplain mire (E32 / E33)	NVC type S28	Extent	Area (ha)	No loss without prior consent	
		Sward composition	Vegetation cover	At least 75%	
			Frequency of <i>Phalaris arundinacea</i>	Dominant throughout	
			Frequency of <i>Epilobium hirsutum</i> and <i>Urtica dioica</i>	Neither species more than occasional	
			Frequency or cover of tree / scrub spp.	No more than 5% cover, if in discrete stands, or no more than occasional throughout the sward	
		Sward structure †	Vegetation height	>80cm	
			Litter in a more or less continuous layer	No more than 15cm deep over 50% of area	
Swamp (F1 / F11)	NVC types S2, F11)	Extent	Area (ha)	No loss without prior consent	
		Sward composition	Cover of <i>Carex elata</i> , <i>Carex paniculata</i> or <i>Cladium mariscus</i>	At least 50%	
			Frequency of positive indicators (DAFOR scale): <i>Angelica sylvestris</i> , <i>Berula erecta</i> *, <i>Calliargon cuspidatum</i> , <i>Caltha palustris</i> , <i>Cirsium palustre</i> , <i>Epipactis palustris</i> , <i>Eupatorium cannabinum</i> , <i>Filipendula ulmaria</i> , <i>Galium palustre</i> , <i>Hydrocotyle vulgaris</i> ,	At least two species occasional	

			<i>Juncus subnodulosus</i> , <i>Lycopus europaeus</i> *, <i>Mentha aquatica</i> , <i>Menyanthes trifoliata</i> *, <i>Potentilla palustris</i> , <i>Scorpidium scorpioides</i> *, <i>Utricularia</i> spp., <i>Viola palustris</i> * * not identified in the 1983 survey		
			Cover of <i>Phragmites australis</i> and other tall graminoids	No more than 50%	
			Frequency of tree / shrub spp. (DAFOR scale)	No more than rare	
		Sward structure	Frequency of tussocks of <i>Carex</i> spp. or <i>Cladium mariscus</i> †	At least frequent	
			Fragmentation of tussocks due to grazing / trampling †	No more than rare	
		Water table	Level of water table †	Within range -15 to +40cm , with standing water between tussocks	

† Discretionary attribute/measure/target

***Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*)**

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Unimproved marshy grassland	M24	*Extent	Total are (ha), mapped in relation to baseline (ie first available map of interest feature when/after notified), in period early June - end of August, measured annually if possible.	No reduction in area and any consequent fragmentation without prior consent	Recoverable reduction = unfavourable; non-recoverable reduction = partially destroyed. Temporary reductions related to natural variation in hydrological conditions should be noted as such where information allows.
		Sward composition: positive indicator species	Record the frequency of positive indicator species from the list below to give an overall total of 2 frequent and 3 occasional. Record in period early June - end of August, measured annually if possible. <i>Anagallis tenella</i> , <i>Angelica sylvestris</i> , <i>Carum verticillatum*</i> , <i>Cirsium dissectum</i> , <i>Erica tetralix</i> , <i>Eupatorium cannabinum</i> , <i>Filipendula ulmaria</i> , <i>Galium uliginosum</i> / <i>Galium palustre</i> , <i>Lotus pedunculatus</i> , <i>Narthecium ossifragum*</i> , <i>Orchidaceae</i> spp., <i>Pedicularis sylvatica</i> , <i>Potentilla erecta</i> , <i>Serratula tinctoria*</i> , small blue-green <i>Carex</i> spp. (leaves less than 5mm wide) (<i>C. flacca</i> , <i>C. nigra</i> , <i>C. panicea</i>), <i>Sphagnum</i> spp., <i>Succisa</i>	Overall total of at least two species/taxa frequent plus at least three species occasional throughout the sward.	Choice of species related to NVC type, restriction to unimproved grassland and wetness characteristics of habitat, all satisfactory when inside target. Among possible species that could be used, choice further restricted by ease of identification, visibility in recording period.

			<i>pratensis, Valeriana dioica, Valeriana officinalis , Viola palustris*</i> . * Not identified in the 1983 survey		
		*Sward composition: frequency and cover of <i>Molinia caerulea</i>	Record the frequency and % cover of <i>Molinia caerulea</i> . Record in period early June - end of August, measured annually if possible.	At least frequent throughout the sward but no more than 80% cover	<i>Molinia</i> is a characteristic component of the community and should thus be at least frequent. However, increasing cover exceeding upper target is indicative of insufficient management by grazing or cutting.
		*Sward composition: negative indicator species	Record the frequency and % cover of negative indicator species. Record in period early June- end of August, measured annually if possible. <i>Cirsium arvense, Cirsium vulgare, Rumex crispus, Rumex obtusifolius, Urtica dioica.</i>	No species more than occasional throughout the sward or singly or together more than 5% cover	Invasive species chosen to indicate problems of eutrophication and disturbance from various sources when outside target eg poaching, stock feeding.
		*Sward composition: cover of <i>Juncus</i> spp	Record the % cover of <i>Juncus</i> species from groups A and B. Record in period early June - end of August, measured annually if possible. Group A: jointed rushes (<i>Juncus acutiflorus, J. articulatus, J. subnodulosus</i>) Group B: <i>Juncus conglomeratus, J. effusus</i> and <i>J. inflexus</i> .	All species combined no more than 80% cover, of which no more than 50% made up of spp. from Group B	<i>Juncus spp</i> can be characteristic components of the community However, increasing cover is indicative of insufficient management by grazing or cutting. Group B species may indicate problems of eutrophication from various sources when outside target eg stock feeding, fertiliser use.
		*Sward composition:	Record the % cover of negative indicator species.	No more than 20% cover.	This species may be indicative of disturbance from various sources when outside target eg

		negative indicator species.	Record in period early June - end of August, measured annually if possible. <i>Cirsium palustre</i> .		poaching, stock feeding.
		*Sward composition: negative indicator species.	Record the % cover of negative indicator species. Record in period early June - end of August, measured annually if possible. <i>Deschampsia cespitosa</i>	No more than 10% cover.	Increasing cover of <i>Deschampsia cespitosa</i> outside target may be indicative of insufficient management by grazing or cutting, overgrazing, disturbance by excessive poaching or altered hydrology eg reduced water movement in the soil profile during the year resulting in anaerobic conditions. Increasing cover may lead to reduced species richness in the community.
		*Sward composition: negative indicator species	Record the % cover or frequency of negative indicator species in period early June - end of August, measured annually if possible. All tree and scrub species excluding <i>Salix repens</i> and <i>Myrica gale</i> , considered together. NB If scrub/tree species in pastures are more than occasional throughout the sward but less than 5% cover, they are soon likely to become a problem if grazing levels are not sufficient or if scrub control is not being carried out.	No more than 5% cover.	Invasive species outside target shows that habitat is not being managed sufficiently eg lack of or insufficient grazing/cutting
		*Sward composition: % cover of <i>Phragmites australis</i>	Record the % cover of <i>Phragmites australis</i> in period early June - end of August, measured annually if possible.	No more than 10% cover.	Increasing cover of <i>Phragmites australis</i> outside target may be indicative of insufficient management by grazing or cutting. Lack of management may ultimately convert the community to tall-fen in some geographical areas.

		Sward composition: negative indicator species.	Record the % cover of negative indicator species. Record in period early June - end of August, measured annually if possible. <i>Senecio aquaticus</i>	No more than occasional throughout the sward	Outside target can discourage hay/grazing management because the species is believed to be toxic to livestock, and is palatable when dry.
		Sward structure: average height	Record sward height in period early June - end of August, measured annually if possible. (Upper target refers to pastures only.)	M24a Sward greater than 5 cm (excluding <i>Juncus</i> spp.) but no more than 25% over 60 cm	Sward height above upper target shows that habitat is not being managed sufficiently eg lack of or insufficient grazing or if below lower target, is being overgrazed.
				M24b,M24c Sward greater than 2 cm (excluding <i>Juncus</i> spp.) but no more than 25% over 15 cm	
		Sward structure: litter	Record cover of litter where in a more or less continuous layer, distributed either in patches or in one larger area. Record in period early June - end of August for pastures, measured annually if possible.	Total extent no more than 25% of the sward	Outside target indicates biomass removal is insufficient eg lack of or insufficient grazing or not cut for hay.
		Sward structure: bare ground	Record extent of bare ground distributed through the sward, noticeable without disturbing the vegetation. Record in period early June - end of August, measured annually if possible	No more than 10% cover	Outside target indicates problems with stock management eg poaching, supplementary feeding.

† Discretionary attribute/measure/target



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cSAC: Breckland
Component SSSI: RAF Lakenheath

Conservation objective for the European Interest on the SSSI

The conservation objectives for the European interests on the SSSI are :

to maintain*, in favourable condition, the:

- Inland dunes with open *Corynephorus* and *Agrostis* grasslands
- Semi-natural dry grasslands and scrubland facies: on calcareous substrates (*Festuco-Brometalia*)

* maintenance implies restoration if the feature is not currently in favourable condition.

The Conservation Objectives for Breckland candidate Special Area of Conservation are, in accordance with para C 10 of PPG 9, the reasons for which the SAC was designated.

The Breckland cSAC includes land within:

Barnhamcross Common SSSI	Grime's Graves SSSI
Berner's Heath, Icklingham SSSI	Lakenheath Warren SSSI
Bridgham and Brettenham Heaths SSSI	Maidencross Hill SSSI
Cavenham - Icklingham Heaths SSSI	RAF Lakenheath SSSI
Cranwich Camp SSSI	Stanford Training Area SSSI
Deadman's Grave, Icklingham SSSI	Thetford Golf Course and Marsh SSSI
East Wretham Heath SSSI	Thetford Heath SSSI
Field Barn Heaths, Hilborough SSSI	Wangford Warren and Carr SSSI
Foxhole Heath, Eriswell SSSI	Weather and Horn Heaths SSSI
Gooderstone Warren SSSI	Weeting Heath SSSI

The Favourable Condition Table will be used by English Nature and other relevant authorities to determine if a site is in favourable condition. Favourable condition is achieved when the targets given below are met.

The favourable condition table should inform the scope and nature of any 'appropriate assessment' under the Habitats Regulations, but an appropriate assessment will also require consideration of issues specific to the individual plan or project. The favourable condition table does not by itself provide a comprehensive basis on which to assess plans and projects as required under Regulations 20-21, 24, 48-50 and 54 - 85. The scope and content of an appropriate assessment will depend upon the location, size and significance of the proposed project. English Nature will advise on a case by case basis.

Following an appropriate assessment, competent authorities are required to ascertain the effect on the integrity of the site. The integrity of the site is defined in para C10 of PPG9 as the coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified. The determination of favourable condition is separate from the judgement of effect upon integrity. For example, there may be a time-lag between a plan or project being initiated and a consequent adverse effect upon integrity becoming manifest in the condition assessment. In such cases, a plan or project may have an adverse effect upon integrity even though the site remains in favourable condition.

Annual counts for qualifying bird species will be used by English Nature, in the context of five year peak means, together with available information on UK population and distribution trends, to assess whether the SPA is continuing to make an appropriate contribution to the Favourable Conservation Status of the species across Europe.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Open grassland with grey hair-grass and common bent grass of inland dunes	U1	*Extent	Total area (approx. 106ha), in period end April-mid July.	No reduction in area and any consequent fragmentation without prior consent	Recoverable reduction = unfavourable; non recoverable reduction = partially destroyed. Excludes bare ground associated with rabbit warrens (see below).
		*Sward composition: positive indicator species	Record the frequency of positive indicator species in period end April-mid July, measured annually if possible. <i>Aira</i> spp., <i>Aphanes</i> spp., <i>Astragalus danicus</i> , <i>Centaureum erythraea</i> , <i>Cladonia</i> spp., <i>Dianthus deltoides</i> , <i>Erigeron acer</i> , <i>Erodium cicutarium</i> , <i>Fragaria vesca</i> , <i>Galium verum</i> , <i>Helianthemum nummularium</i> , <i>Leontodon hispidus/L. saxatilis</i> , <i>Lotus corniculatus</i> , <i>Ornithopus perpusillus</i> , <i>Pilosella officinarum (Hieracium pilosella)</i> , <i>Plantago coronopus</i> , <i>Rumex acetosella</i> , <i>Sedum acre</i> , <i>Teesdalia nudicaulis</i> , <i>Thymus</i> spp. [NB <i>Silene otites</i> can count towards the total of the +ve indicator species].	At least two species/taxa frequent and four species occasional throughout the sward	Choice of species related to NVC type and restriction to unimproved grassland, considered satisfactory when inside target. Among possible species that could be used, choice further restricted by ease of identification, visibility in recording period.
		*Sward composition: positive indicator species	Record the frequency of <i>Corynephorus canescens</i> in the period May to mid.	<i>C. canescens</i> at least frequent throughout the sward.	There should be no reduction in area of the open grassland supporting <i>Corynephorus canescens</i> from the baseline survey of 1993
		*Sward composition: negative indicator species	Record the frequency and % cover of negative indicator species. Record in period end April-mid July, measured annually if possible. <i>Carduus nutans</i> , <i>Chamerion angustifolium</i> , <i>Cirsium arvense</i> , <i>Cirsium vulgare</i> , <i>Plantago major</i> , <i>Urtica dioica</i> , <i>Pteridium aquilinum</i> , <i>Deschampsia flexuosa</i> .	No species/taxa more than occasional throughout the sward or singly or together more than 5% cover.	Invasive species chosen to indicate problem of eutrophication and disturbance from various sources when outside target e.g. poaching, stock feeding.
		*Sward composition: negative indicator species	Record the frequency and % cover of all tree and scrub species, considered together. NB If scrub/tree species are more than occasional throughout the sward but less than 5% cover, they are soon likely to become a problem if grazing levels are not sufficient or if scrub control is not	No more than 5% cover.	Invasive species outside target shows that habitat is not being managed sufficiently eg under-grazed.

			being carried out.		
		*Sward composition: negative indicator species	Record % cover of coarse grasses <i>e.g. Holcus lanatus, Dactylis glomerata</i> , in period end April-mid July.	No more than 10% cover	Invasive species chosen to indicate problem of eutrophication and insufficient removal of biomass eg under-grazing.
		Sward composition: positive indicator species <i>Silene otites</i>	Record the frequency of positive indicator species in period end April-mid July. <i>Silene otites</i>	At least occasional throughout the sward.	Choice of species related to NVC type and restriction to unimproved grassland, considered satisfactory when inside target.
		Sward composition: negative indicator species	Record frequency of <i>Senecio jacobaea</i> , in period end April-mid July, measured annually if possible.	No more than occasional throughout the sward	Frequency outside target indicates management problems eg over-grazing and trampling.
		Sward structure: average height	Record sward height in period end April-mid July, measured annually if possible.	Sward 5 cms or less	Outside target indicates insufficient grazing mowing
		Sward structure: litter	Record cover of litter where in a more or less continuous layer, distributed either in patches or in one larger area, measured annually if possible.	Total extent no more than 25% of the sward	Outside target indicates biomass removal is insufficient
		Sward structure: bare ground	Record extent of bare ground (not rock) distributed through the sward, noticeable without disturbing the vegetation, in period end April-mid July. Measure annually if possible.	No more than 15% .	Outside target indicates management problems.
Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Calcareous grassland	CG7b	*Extent	Total area (ha), mapped in relation to a site-specific reference level to be determined, in period end April-mid July.	No reduction in area and any consequent fragmentation without prior consent	Recoverable reduction = unfavourable; non-recoverable reduction = partially destroyed. Excludes bare ground associated with rabbit warrens (see below).
		*Sward composition: positive indicator species	Record the frequency of positive indicator species in period end April-mid July. <i>Aira</i> spp., <i>Aphanes</i> spp., <i>Astragalus danicus</i> , <i>Centaurium erythraea</i> , <i>Cladonia</i> spp, <i>Dianthus deltoides</i> , <i>Erigeron acer</i> , <i>Erodium cicutarium</i> , <i>Fragaria vesca</i> , <i>Galium verum</i> , <i>Helianthemum nummularium</i> , <i>Leontodon hispidus/L. saxatilis</i> , <i>Lotus corniculatus</i> , <i>Ornithopus perpusillus</i> , <i>Pilosella officinarum</i> (<i>Hieracium pilosella</i>),	At least two species/taxa frequent and four species/taxa occasional throughout the sward	Choice of species related to NVC type and restriction to unimproved grassland, considered satisfactory when inside target. Among possible species that could be used, choice further restricted by ease of identification, visibility in recording period.

			<i>Plantago coronopus</i> , <i>Rumex acetosella</i> , <i>Sedum acre</i> , <i>Teesdalia nudicaulis</i> , <i>Thymus</i> spp.		
		*Sward composition: negative indicator species	Record the frequency and % cover of negative indicator species. Record in period end April-mid July. <i>Carduus nutans</i> , <i>Chamerion angustifolium</i> , <i>Cirsium arvense</i> , <i>Cirsium vulgare</i> , <i>Plantago major</i> , <i>Urtica dioica</i> .	No species/taxa more than occasional throughout the sward or singly or together more than 5% cover	Invasive species chosen to indicate problem of eutrophication and disturbance from various sources when outside target eg poaching, stock feeding.
		*Sward composition: negative indicator species	Record the frequency and % cover of all tree and scrub species excluding <i>Juniperus communis</i> , considered together, in period end April-mid July. NB If scrub/tree species are more than occasional throughout the sward but less than 5% cover, they are soon likely to become a problem if grazing levels are not sufficient or if scrub control is not being carried out.	No more than 5% cover.	Invasive species outside target shows that habitat is not being managed sufficiently eg under-grazed.
		*Sward composition: negative indicator species	Record % cover of coarse grasses eg <i>Holcus lanatus</i> , <i>Dactylis glomerata</i> , in period end April-mid July.	No more than 10% cover	Invasive species chosen to indicate problem of eutrophication and insufficient removal of biomass eg under-grazing
		Sward composition: negative indicator species	Record frequency of <i>Senecio jacobaea</i> , in period end April-mid July.	No more than occasional throughout the sward	Frequency outside target indicates management problems eg over-grazing and trampling.
		Sward structure: average height	Record sward height in period end April-mid July.	Sward 5 cms or less	Outside target indicates insufficient grazing
		Sward structure: litter	Record cover of litter where in a more or less continuous layer, distributed either in patches or in one larger area, in period end April-mid July.	Total extent no more than 25% of the sward	Outside target indicates biomass removal is insufficient eg under-grazed.
		Sward structure: bare ground	Record extent of bare ground (not rock) distributed through the sward, visible without disturbing the vegetation, in period end April-mid July.	No more than 15% .	Outside target indicates management problem eg over-grazing.
		Sward structure: localized bare ground	Record extent of localized bare ground around rabbit warrens.	No more than 0.25 ha ie approximately 50x50 metres	Heavy rabbit grazing usually associated with this type but outside target indicates rabbit grazing and disturbance levels are too high.



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cSAC: The Broads
SPA: Broadland
Component SSSI: Priory Meadows, Hickling

Conservation objectives for the European Interest on the SSSI

The conservation objectives for the European interest on the SSSI are:

to maintain*, in favourable condition, the:

- Natural eutrophic lakes with *Magnopotamion* or *Hydrocharition*-type vegetation.
- *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*).
- Hard oligo-mesotrophic waters with benthic vegetation of *Chara* spp..

to maintain*, in favourable condition, the habitats for the population of:

- Otter (*Lutra lutra*).

to maintain*, in favourable condition, the habitats for the populations of Annex1 bird species⁺ of European importance with particular reference to:

- fen meadow with ditches and water bodies
- lowland acid grassland with ditches.

+Marsh harrier, Hen harrier.

to maintain*, in favourable condition, the habitats of the populations of waterfowl that contribute to the wintering waterfowl assemblage of European importance, with particular reference to,

- open water
- fen meadow with ditches and water bodies.

* maintenance implies restoration if the feature is not currently in favourable condition.

The Conservation Objectives for The Broads candidate Special Area of Conservation and Broadland Special Protection Area are, in accordance with para C 10 of PPG 9, the reasons for which the cSAC was designated and the SPA classified. The entry of 30 January 1996 on the Register of European Sites gives the reasons for which the SPA was classified.

The **Broads cSAC** and **Broadland SPA** includes land within: Alderfen Broad SSSI, Ant Broads and Marshes SSSI, Barnby Broad and Marshes SSSI, Broad Fen, Dilham SSSI, Bure Broads and Marshes SSSI, Burgh Common and Muckfleet Marshes SSSI, Calthorpe Broad SSSI, Cantley Marshes SSSI, Crostwick Marsh SSSI, Decoy Carr, Acle SSSI, Ducan's Marsh, Claxton SSSI, Geldeston Meadows SSSI, Hall Farm Fen, Hemsby SSSI, Halvergate Marshes SSSI, Hardley Flood SSSI, Limpenhoe Meadows SSSI, Ludham-Potter Heigham Marshes SSSI, Poplar Farm Meadows, Langley SSSI, Priory Meadows, Hickling SSSI, Shallam Dyke Marshes, Thurne SSSI, Smallburgh Fen SSSI, Sprat's Water and Marshes, Carlton Colville SSSI, Stanley and Alder Carrs, Aldeby SSSI, Upper Thurne Broads and Marshes SSSI, Upton Broads and Marshes SSSI and Yare Broads and Marshes SSSI.

The **Broads cSAC** additionally includes land within: Damgate Marshes, Acle SSSI and Trinity Broads SSSI.

Favourable Condition Table for Priory Meadows, Hickling SSSI

The Favourable Condition Table will be used by English Nature and other relevant authorities to determine if a site is in favourable condition. Favourable condition is achieved when the targets given below are met.

The favourable condition table should inform the scope and nature of any 'appropriate assessment' under the Habitats Regulations, but an appropriate assessment will also require consideration of issues specific to the individual plan or project. The favourable condition table does not by itself provide a comprehensive basis on which to assess plans and projects as required under Regulations 20-21, 24, 48-50 and 54 - 85. The scope and content of an appropriate assessment will depend upon the location, size and significance of the proposed project. English Nature will advise on a case by case basis.

Following an appropriate assessment, competent authorities are required to ascertain the effect on the integrity of the site. The integrity of the site is defined in para C10 of PPG9 as the coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified. The determination of favourable condition is separate from the judgement of effect upon integrity. For example, there may be a time-lag between a plan or project being initiated and a consequent adverse effect upon integrity becoming manifest in the condition assessment. In such cases, a plan or project may have an adverse effect upon integrity even though the site remains in favourable condition.

Annual counts for qualifying bird species will be used by English Nature, in the context of five year peak means, together with available information on UK population and distribution trends, to assess whether the SPA is continuing to make an appropriate contribution to the Favourable Conservation Status of the species across Europe.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Molinia meadows on calcareous, peaty or clayey-silt-laden soils (<i>Molinion caeruleae</i>)	NVC type M24	Extent	Total area (ha), mapped in relation to a site-specific reference level to be determined, in period early June - end of August.	No reduction in area and any consequent fragmentation without prior consent	Recoverable reduction = unfavourable; non-recoverable reduction = partially destroyed. Temporary reductions related to natural variation in hydrological conditions should be noted as such where information allows.
		Unimproved marshy grassland	Sward composition: positive indicator species	Record the frequency of positive indicator species from the list below to give an overall total of 2 frequent and 3 occasional. Record in period early June - end of August. <i>Anagallis tenella, Angelica sylvestris, Cirsium dissectum, Erica tetralix, Eupatorium cannabinum, Filipendula ulmaria, Galium uliginosum/ Galium palustre, Orchidaceae spp., Pedicularis sylvatica, Potentilla erecta, small blue-green Carex spp. (leaves less than 5mm wide) (C. flacca, C.nigra, C.panicea), Sphagnum spp., Succisa pratensis, Valeriana dioica, Valeriana officinalis , Viola palustris.</i>	Overall total of at least two species/taxa frequent plus at least three species/taxa occasional throughout the sward.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		Sward composition: frequency and cover of <i>Molinia caerulea</i>	Record the frequency and % cover of <i>Molinia caerulea</i> . Record in period early June - end of August.	At least frequent throughout the sward but no more than 80% cover	<i>Molinia</i> is a characteristic component of the community and should thus be at least frequent. However, increasing cover exceeding upper target is indicative of insufficient management by grazing or cutting.
		Sward composition: negative indicator species	Record the frequency and % cover of negative indicator species. Record in period early June- end of August. <i>Cirsium arvense, Cirsium vulgare, Rumex crispus, Rumex obtusifolius, Urtica dioica.</i>	No species more than occasional throughout the sward or singly or together more than 5% cover	Invasive species chosen to indicate problems of eutrophication and disturbance from various sources when outside target eg poaching, stock feeding.
		Sward composition: cover of <i>Juncus</i> spp	Record the % cover of <i>Juncus</i> species from groups A and B. Record in period early June - end of August. Group A: jointed rushes (<i>Juncus acutiflorus, J. articulatus, J. subnodulosus</i>) Group B: <i>Juncus conglomeratus, J. effusus</i> and <i>J. inflexus</i> .	All species combined no more than 80% cover, of which no more than 50% made up of spp. from Group B	<i>Juncus</i> spp can be characteristic components of the communities. However, increasing cover is indicative of insufficient management by grazing or cutting and/or waterlogging. Group B species may indicate problems of eutrophication from various sources when outside target eg stock feeding, fertiliser use.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		*Sward composition: negative indicator species.	Record the % cover of negative indicator species. Record in period early June - end of August. <i>Cirsium palustre.</i>	No more than 20% cover.	This species may be indicative of disturbance from various sources when outside target eg poaching, stock feeding.
		*Sward composition: negative indicator species.	Record the % cover of negative indicator species. Record in period early June - end of August. <i>Deschampsia cespitosa</i>	No more than 10% cover.	Increasing cover of <i>Deschampsia cespitosa</i> outside target may be indicative of insufficient management by grazing or cutting, overgrazing, disturbance by excessive poaching or altered hydrology eg reduced water movement in the soil profile during the year resulting in anaerobic conditions. Increasing cover may lead to reduced species richness in the community.
		*Sward composition: negative indicator species	Record the % cover or frequency of negative indicator species in period early June - end of August. All tree and scrub species excluding <i>Salix repens</i> and <i>Myrica gale</i> , considered together. NB If scrub/tree species in pastures are more than occasional throughout the sward but less than 5% cover, they are soon likely to become a problem if grazing levels are not sufficient or if scrub control is not being carried out.	No more than 5% cover.	Invasive species outside target shows that habitat is not being managed sufficiently eg lack of or insufficient grazing/cutting

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		*Sward composition: % cover of <i>Phragmites australis</i>	Record the % cover of <i>Phragmites australis</i> in period early June-end of August.	No more than 10% cover.	Increasing cover of <i>Phragmites australis</i> outside target may be indicative of insufficient management by grazing or cutting. Lack of management may ultimately convert the community to tall-fen in some geographical areas.
		Sward composition: % cover of <i>Myrica gale</i> .	Record the % cover of <i>Myrica gale</i> in period early June - end of August.	No more than 10% cover	If <i>Myrica</i> cover outside target this shows that habitat is not being managed sufficiently eg lack of or insufficient grazing/cutting
		Sward composition: negative indicator species.	Record the frequency and % cover of negative indicator species. Record in period early June - end of August. <i>Senecio aquaticus</i>	No more than occasional throughout the sward or more than 5% cover	Outside target can discourage hay/grazing management because the species is toxic to livestock, and is palatable when dry.
		Sward structure: average height	Record sward height in period early June - end of August. (Upper target refers to pastures only.)	M24a Sward 5 cm or greater (excluding <i>Juncus</i> spp.) but no more than 25% over 60 cm M24b Sward 2 cm or greater (excluding <i>Juncus</i> spp.) but no more than 25% over 15 cm	Sward height above upper target shows that habitat is not being managed sufficiently eg lack of or insufficient grazing or if below lower target, is being overgrazed.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		Sward structure: litter	Record cover of litter where in a more or less continuous layer, distributed either in patches or in one larger area. Record in period early June - end of August for pastures.	Total extent no more than 25% of the sward	Outside target indicates biomass removal is insufficient eg lack of or insufficient grazing or not cut for hay.
		Sward structure: bare ground	Record extent of bare ground distributed through the sward, visible without disturbing the vegetation. Record in period early June - end of August.	No more than 10%	Outside target indicates problems with stock management eg poaching, supplementary feeding.
22.13 Natural eutrophic lakes with Magnopotamion or Hydrocharit ion type vegetation.	NVC types: A3 A9 A13 A4 Types '7', '8', '9' and '10' of the GB Standing Water Classification.	Extent of community.	Check extent of beds in July/August every 4 years.	Extensive beds of submerged macrophytes should be present. Maintain mixed community.	Submerged vegetation characterised by broad leaved <i>Potamogeton</i> species such as <i>Potamogeton perfoliatus</i> , <i>P lucens</i> , <i>P crispus</i> , <i>P natans</i> , <i>P x salicilifolius</i> , <i>P coloratus</i> , <i>P polygonifolius</i> , <i>P gramineus</i> , <i>P. alpinus</i> and <i>Hydrocharit ion</i> type vegetation. <i>Hydrocharis morsus-ranae</i> is a very rare associate with the <i>Magnopotamion</i> in the UK. Its community components are present, however, mainly <i>Spirodela polyrhiza</i> , <i>Lemna minor</i> , <i>Hippuris vulgaris</i> , <i>Utricularia vulgaris</i> and <i>Apium inundatum</i> . Community should be mixed and no one species should be present above 40% level of total amount of macrophyte presence.
Standing water-ponds and ditch system		Extent of <i>Potamogeton</i> species <i>Magnopotamion</i> .	Check species presence in July/August every 4 years.	Maintain species presence of all <i>Magnopotamion</i> and fine leaved <i>Potamogetons</i> .	No one <i>Potamogeton</i> species should be present above 40% level of total amount or level of macrophyte presence (see Water Quality comment).

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		Extent of nationally scarce or threatened species.	Establish population size and position of nationally scarce, rare or threatened species over a period of 3 years, on a quarterly basis; thereafter every two years in July/August.	Maintain presence of all nationally scarce, rare or threatened plant species.	Nationally scarce, rare or threatened species can vary in population size and extent due to temporal/seasonal changes in climate which affects physical variables such as water temperature.
		Water quality	Arrange for analysis of quarterly measurements of Total P for first three years; thereafter annually in July/August.	Maintain water quality particularly Total P levels. For southern systems 100 $\mu\text{g l}^{-1}$ or below, down to 65 $\mu\text{g l}^{-1}$.	The variable targets for Total P reflects the geographical range of this trophic state. The target for Total P should be set for individual SAC's and an acceptable range established. Increases in Total P suggest a need to move from annual July/August check, back to more intensive quarterly samples to verify whether change is real. Also check for cover shifts of macrophytes and dominant presence of pollution tolerant species above 40% level such as <i>Potamogeton pectinatus</i> , <i>Myriophyllum spicatum</i> and/or <i>Ceratophyllum demersum</i> .
		Water quantity	Check ditch levels during July/August.	Maintain hydrology of ditch system.	Hydrology involves not only ditch levels but flushing rates; prevent lowering or raising of ditch level through modification of outfalls. With ditch systems aim for constant high water table throughout the year Water abstraction may represent a significant issue through the reduction of ground water and flushing flows into marginal ditch systems.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		Sediment	Check for excessive growths of individual macrophytes ie above 40%.	Maintain sediment quality and quantity.	Effects of increased macrophyte growth also relates to water quality; if this is at target levels, then enrichment of sediments is an issue if broad leaved <i>Potamogeton</i> species decline and fine leaved <i>Potamogeton pectinatus</i> increases above 40% level or <i>Myriophyllum spicatum</i> / <i>Ceratophyllum demersum</i> become dominant. Introduced fish might through sediment disturbance move sites out of favourable condition. Check for increases in siltation from catchment use changes or changes in sewage disposal.
22.12/44 Hard oligo-mesotrophic waters with benthic vegetation of Chara formations Ditch systems.	Almost exclusively type '4' of the GB Standing Water Classification. Very rarely types '5' and '10'.	Extent of <i>Chara</i> beds.	Check extent of <i>Chara</i> beds in July on an annual basis.	Maintain type and extent of <i>Chara</i> vegetation which is optimal for the interest feature. No significant decrease from reference level. Reference level to be determined.	<i>Chara</i> community. <i>Chara</i> formations of various species. Endangered/Vulnerable/Rare species are <i>Chara intermedia</i> , <i>Chara baltica</i> , <i>Chara canescens</i> , <i>Chara rudis</i> and <i>Chara connivens</i> ; and nationally scarce species are <i>Chara aspersa</i> , <i>Chara contraria</i> , <i>Chara pedunculata</i> and <i>Chara curta</i> . All are potentially components of a supporting community of <i>Myriophyllum spicatum</i> , <i>Potamogeton</i> species, <i>Callitriche</i> species and <i>Nymphaea alba</i> / <i>Nuphar lutea</i> . Turf ponds often fringed by <i>Phragmites australis</i> , <i>Typha angustifolia</i> and <i>Schoenoplectus lacustris</i> . Baseline survey should be carried out to determine present extent of <i>Chara</i> beds. Check for deterioration, extent of epiphytic growth on <i>Chara</i> . "Holes" in <i>Chara</i> beds should be monitored. <i>Elodea canadensis</i> should be absent. As <i>Chara</i> species are a colonising aspect of seral progression supporting macrophyte community may have to be managed to prevent seral progression. Extent will be variable according to site and can be variable according to seasonal changes In many cases <i>Chara</i> will be dominant feature.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		Extent of supporting community including emergent vegetation.	Check community of associated macrophytes including, rare species, on an annual basis. Rare species include <i>Najas marina</i> . Maintain Chara and other species diversity.	Stable not expanding or contracting supporting community over 5 year period within limits of $\pm 10\%$ annually.	
		Water quality	Absence of filamentous algae and unicellular algal blooms. Establish Total P range by quarterly measurements over 3 year period, thereafter annually July/August.	For <i>Chara</i> lake $30 \mu\text{g l}^{-1}$ total phosphorus or below. Eutrophic conditions above $30 \mu\text{g l}^{-1}$ total phosphorus should not be prevalent.	Filamentous algae should be absent. The range of marl lakes exhibit a continuum of trophic condition from oligotrophy to low eutrophy. So the trophic condition for each marl lake type should be maintained. If filamentous algae present. Check for diffuse or point sources of pollution. Check Total P levels in aquifer if aquifer fed, check also that site not used for black-headed gull roosting or breeding. The target level should be set for individual SAC's and an acceptable range established. Increases in Total P level suggest need to move from annual July/August check back to more intensive quarterly samples to verify whether change is real.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		Sediment	Check condition of sediment and measure overall cover of marl every 10 years.	Marl production desirable, although this may be low or absent in oligotrophic hard waters. Some peat slumping acceptable, provided this is not induced due to land drainage.	Check immediate catchment area for drainage or land use change which might induce high sediment loads to enter system.
		Hydrology	Check water level in July annually.	Maintenance of stable water level desirable, although seasonal fluctuations expected.	Water level change downwards acceptable only in dry years. If lake level lowering due to outside water demands such as aquifer abstraction then counter measures need to be instigated.
River, lake and ditch system.	Otter <i>Lutra lutra</i>	Water quality	EA scale	"Good", with no pollution incidents	Refer to Environment Agency for data
		Flow rate	Mean annual flow rate	No reduction attributable to increased abstraction.	Data from Environment Agency
		Site integrity	Total area	No reduction of fragmentation of area	

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		Fish stocks	EA assessment	Fish stocks appropriate to the nutrient status of the river No significant decline in fish biomass or species diversity	Refer to Environment Agency for sample data
		Disturbance	Extent of public access to river	No significant change to river or bankside usage; no significant development	
		Bankside cover	Proportion of bank lined with trees, scrub or other thick cover	No overall permanent decrease	Some change acceptable as long as it is appropriately mitigated
		Presence of otters	Signs of otters	Signs of otters found at least once per year	Use data from national or county surveys
All habitats: Fen meadow, Marginal and Inundation, Standing Water	Annex 1 species of European importance.	Extent of habitat.	Area (ha), measured periodically (frequency to be determined).	No significant decrease from reference level.	For all habitats for all qualifying species. Methodology for assessing target to be determined. Reference level to be determined.
		Disturbance in roosting and feeding areas	Reduction or displacement of birds, measured periodically (frequency to be determined).	No significant displacement of birds attributable to human disturbance in relation to reference level.	All qualifying breeding and wintering annex 1 species. Methodology for assessing target to be determined. Reference level to be determined.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
All habitats: Fen meadow, Marginal and Inundation, Standing Water	Annex 1 species of European importance.	Food Availability	Abundance of live mammals and birds, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of food species year round in relation to reference level.	Small-medium sized mammals (voles, mice, rabbits) and birds (pipits to ducks) are important prey in the breeding season for marsh harriers and during the winter for hen harriers. Methodology for assessing target to be determined. Reference level to be determined.
Standing Water	Nationally important migratory species.	Food Availability	Presence and abundance of seed bearing plants, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of food species during the winter season in relation to reference level.	<i>Polygonum, Eleocharis, Rumex</i> and <i>Ranunculus</i> are important for Teal. Methodology for assessing target to be determined. Reference level to be determined.
Standing Water	Nationally important migratory species.	Food availability	Presence and abundance of aquatic invertebrates, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of prey species during the winter season in relation to reference level.	Hydrobia, flies, caddisfly, beetles and bugs are important for teal. Methodology for assessing target to be determined. Reference level to be determined.
Standing Water	Nationally important migratory species.	Water depth	Areas of shallow medium and deep water (feeding), measured periodically (frequency to be determined).	Water depths should not deviate significantly during the winter season.	Teal require a water depth of <30cm. Methodology for assessing target to be determined.



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cSAC: The Broads
SPA: Broadland
Component SSSI: Poplar Farm Meadows, Langley

Conservation objectives for the European Interest on the SSSI

The conservation objectives for the European interest on the SSSI are:

to maintain*, in favourable condition, the:

- Hard oligo-mesotrophic waters with benthic vegetation of *Chara* spp..
- *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*).
- Natural eutrophic lakes with *Magnopotamion* or *Hydrocharition*-type vegetation.

to maintain*, in favourable condition, the habitats for the population of:

- Otter (*Lutra lutra*).

to maintain*, in favourable condition, the habitats for the populations of Annex1 bird species⁺ of European importance with particular reference to:

- fen meadow with ditches.
- lowland wet grassland with ditches.

+Marsh harrier, Hen harrier.

to maintain*, in favourable condition, the habitats for the populations of migratory bird species⁺ of European importance with particular reference to:

- fen meadow with ditches.
- lowland wet grassland with ditches.

+Shoveler.

* maintenance implies restoration if the feature is not currently in favourable condition.

The Conservation Objectives for The Broads candidate Special Area of Conservation and Broadland Special Protection Area are, in accordance with para C 10 of PPG 9, the reasons for which the cSAC was designated and the SPA classified. The entry of 30 January 1996 on the Register of European Sites gives the reasons for which the SPA was classified.

The **Broads cSAC** and **Broadland SPA** includes land within: Alderfen Broad SSSI, Ant Broads and Marshes SSSI, Barnby Broad and Marshes SSSI, Broad Fen, Dilham SSSI, Bure Broads and Marshes SSSI, Burgh Common and Muckfleet Marshes SSSI, Calthorpe Broad SSSI, Cantley Marshes SSSI, Crostwick Marsh SSSI, Decoy Carr, Acle SSSI, Ducan's Marsh, Claxton SSSI, Geldeston Meadows SSSI, Hall Farm Fen, Hemsby SSSI, Halvergate Marshes SSSI, Hardley Flood SSSI, Limpenhoe Meadows SSSI, Ludham-Potter Heigham Marshes SSSI, Poplar Farm Meadows, Langley SSSI, Priory Meadows, Hickling SSSI, Shallam Dyke Marshes, Thurne SSSI, Smallburgh Fen SSSI, Sprat's Water and Marshes, Carlton Colville SSSI, Stanley and Alder Carrs, Aldeby SSSI, Upper Thurne Broads and Marshes SSSI, Upton Broads and Marshes SSSI and Yare Broads and Marshes SSSI.

The **Broads cSAC** additionally includes land within: Damgate Marshes, Acle SSSI and Trinity Broads SSSI.

Favourable Condition Table for Poplar Farm Meadows, Langley SSSI

The Favourable Condition Table will be used by English Nature and other relevant authorities to determine if a site is in favourable condition. Favourable condition is achieved when the targets given below are met.

The favourable condition table should inform the scope and nature of any 'appropriate assessment' under the Habitats Regulations, but an appropriate assessment will also require consideration of issues specific to the individual plan or project. The favourable condition table does not by itself provide a comprehensive basis on which to assess plans and projects as required under Regulations 20-21, 24, 48-50 and 54 - 85. The scope and content of an appropriate assessment will depend upon the location, size and significance of the proposed project. English Nature will advise on a case by case basis.

Following an appropriate assessment, competent authorities are required to ascertain the effect on the integrity of the site. The integrity of the site is defined in para C10 of PPG9 as the coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified. The determination of favourable condition is separate from the judgement of effect upon integrity. For example, there may be a time-lag between a plan or project being initiated and a consequent adverse effect upon integrity becoming manifest in the condition assessment. In such cases, a plan or project may have an adverse effect upon integrity even though the site remains in favourable condition.

Annual counts for qualifying bird species will be used by English Nature, in the context of five year peak means, together with available information on UK population and distribution trends, to assess whether the SPA is continuing to make an appropriate contribution to the Favourable Conservation Status of the species across Europe.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Molinia meadows on calcareous, peaty or clayey-silt-laden soils (<i>Molinion caeruleae</i>)	NVC type M24	Extent	Total area (ha), mapped in relation to a site-specific reference level to be determined, in period early June - end of August.	No reduction in area and any consequent fragmentation without prior consent	Recoverable reduction = unfavourable; non-recoverable reduction = partially destroyed. Temporary reductions related to natural variation in hydrological conditions should be noted as such where information allows.
Unimproved marshy grassland		Sward composition: positive indicator species	Record the frequency of positive indicator species from the list below to give an overall total of 2 frequent and 3 occasional. Record in period early June - end of August. <i>Anagallis tenella, Angelica sylvestris, Cirsium dissectum, Erica tetralix, Eupatorium cannabinum, Filipendula ulmaria, Galium uliginosum/ Galium palustre, Orchidaceae spp., Pedicularis sylvatica, Potentilla erecta, small blue-green Carex spp. (leaves less than 5mm wide) (C. flacca, C.nigra, C.panicea), Sphagnum spp., Succisa pratensis, Valeriana dioica, Valeriana officinalis, Viola palustris.</i>	Overall total of at least two species/taxa frequent plus at least three species/taxa occasional throughout the sward.	Choice of species related to NVC types, restriction to unimproved grassland and wetness characteristics of habitat, all satisfactory when inside target. Among possible species that could be used, choice further restricted by ease of identification, visibility in recording period.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		Sward composition: frequency and cover of <i>Molinia caerulea</i>	Record the frequency and % cover of <i>Molinia caerulea</i> . Record in period early June - end of August.	At least frequent throughout the sward but no more than 80% cover	<i>Molinia</i> is a characteristic component of the community and should thus be at least frequent. However, increasing cover exceeding upper target is indicative of insufficient management by grazing or cutting.
		Sward composition: negative indicator species	Record the frequency and % cover of negative indicator species. Record in period early June- end of August. <i>Cirsium arvense, Cirsium vulgare, Rumex crispus, Rumex obtusifolius, Urtica dioica.</i>	No species more than occasional throughout the sward or singly or together more than 5% cover	Invasive species chosen to indicate problems of eutrophication and disturbance from various sources when outside target eg poaching, stock feeding.
		Sward composition: cover of <i>Juncus</i> spp	Record the % cover of <i>Juncus</i> species from groups A and B. Record in period early June - end of August. Group A: jointed rushes (<i>Juncus acutiflorus, J. articulatus, J. subnodulosus</i>) Group B: <i>Juncus conglomeratus, J. effusus and J. inflexus.</i>	All species combined no more than 80% cover, of which no more than 50% made up of spp. from Group B	<i>Juncus</i> spp can be characteristic components of the communities. However, increasing cover is indicative of insufficient management by grazing or cutting and/or waterlogging. Group B species may indicate problems of eutrophication from various sources when outside target eg stock feeding, fertiliser use.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		*Sward composition: negative indicator species.	Record the % cover of negative indicator species. Record in period early June - end of August. <i>Cirsium palustre.</i>	No more than 20% cover.	This species may be indicative of disturbance from various sources when outside target eg poaching, stock feeding.
		*Sward composition: negative indicator species.	Record the % cover of negative indicator species. Record in period early June - end of August. <i>Deschampsia cespitosa</i>	No more than 10% cover.	Increasing cover of <i>Deschampsia cespitosa</i> outside target may be indicative of insufficient management by grazing or cutting, overgrazing, disturbance by excessive poaching or altered hydrology eg reduced water movement in the soil profile during the year resulting in anaerobic conditions. Increasing cover may lead to reduced species richness in the community.
		*Sward composition: negative indicator species	Record the % cover or frequency of negative indicator species in period early June - end of August. All tree and scrub species excluding <i>Salix repens</i> and <i>Myrica gale</i> , considered together. NB If scrub/tree species in pastures are more than occasional throughout the sward but less than 5% cover, they are soon likely to become a problem if grazing levels are not sufficient or if scrub control is not being carried out.	No more than 5% cover.	Invasive species outside target shows that habitat is not being managed sufficiently eg lack of or insufficient grazing/cutting

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		*Sward composition: % cover of <i>Phragmites australis</i>	Record the % cover of <i>Phragmites australis</i> in period early June-end of August.	No more than 10% cover.	Increasing cover of <i>Phragmites australis</i> outside target may be indicative of insufficient management by grazing or cutting. Lack of management may ultimately convert the community to tall-fen in some geographical areas.
		Sward composition: % cover of <i>Myrica gale</i> .	Record the % cover of <i>Myrica gale</i> in period early June - end of August.	No more than 10% cover	If <i>Myrica</i> cover outside target this shows that habitat is not being managed sufficiently eg lack of or insufficient grazing/cutting
		Sward composition: negative indicator species.	Record the frequency and % cover of negative indicator species. Record in period early June - end of August. <i>Senecio aquaticus</i>	No more than occasional throughout the sward or more than 5% cover	Outside target can discourage hay/grazing management because the species is toxic to livestock, and is palatable when dry.
		Sward structure: average height	Record sward height in period early June - end of August. (Upper target refers to pastures only.)	M24a Sward 5 cm or greater (excluding <i>Juncus</i> spp.) but no more than 25% over 60 cm M24b Sward 2 cm or greater (excluding <i>Juncus</i> spp.) but no more than 25% over 15 cm	Sward height above upper target shows that habitat is not being managed sufficiently eg lack of or insufficient grazing or if below lower target, is being overgrazed.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		Sward structure: litter	Record cover of litter where in a more or less continuous layer, distributed either in patches or in one larger area. Record in period early June - end of August for pastures.	Total extent no more than 25% of the sward	Outside target indicates biomass removal is insufficient eg lack of or insufficient grazing or not cut for hay.
		Sward structure: bare ground	Record extent of bare ground distributed through the sward, visible without disturbing the vegetation. Record in period early June - end of August.	No more than 10%	Outside target indicates problems with stock management eg poaching, supplementary feeding.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
22.12/44 Hard oligo- mesotrophic waters with benthic vegetation of <i>Chara</i> formations	Almost exclusively type '4' of the GB Standing Water Classification. Very rarely types '5' and '10'.	Extent of <i>Chara</i> beds.	Check extent of <i>Chara</i> beds in July on an annual basis.	Maintain type and extent of <i>Chara</i> vegetation which is optimal for the interest feature. No significant decrease from reference level. Reference level to be determined.	<i>Chara</i> community. <i>Chara</i> formations of various species. Endangered/Vulnerable/Rare species are <i>Chara intermedia</i> , <i>Chara baltica</i> , <i>Chara canescens</i> , <i>Chara rudis</i> and <i>Chara connivens</i> ; and nationally scarce species are <i>Chara aspersa</i> , <i>Chara contraria</i> , <i>Chara pedunculata</i> and <i>Chara curta</i> . All are potentially components of a supporting community of <i>Myriophyllum spicatum</i> , <i>Potamogeton</i> species, <i>Callitriche</i> species and <i>Nymphaea alba/Nuphar lutea</i> . Baseline survey should be carried out to determine present extent of <i>Chara</i> beds. Check for deterioration, extent of epiphytic growth on <i>Chara</i> . "Holes" in <i>Chara</i> beds should be monitored. <i>Elodea canadensis</i> should be absent. As <i>Chara</i> species are a colonising aspect of seral progression supporting macrophyte community may have to be managed to prevent seral progression. Extent will be variable according to site and can be variable according to seasonal changes In many cases <i>Chara</i> will be dominant feature.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Standing water-ditch system.		Extent of supporting community including emergent vegetation.	Check community of associated macrophytes including, rare species, on an annual basis. Maintain Chara and other species diversity.	Stable not expanding or contracting supporting community over 5 year period within limits of $\pm 10\%$ annually.	
		Water quality	Absence of filamentous algae and unicellular algal blooms. Establish Total P range by quarterly measurements over 3 year period, thereafter annually July/August.	For <i>Chara</i> lake $30 \mu\text{g l}^{-1}$ total phosphorus or below. Eutrophic conditions above $30 \mu\text{g l}^{-1}$ total phosphorus should not be prevalent.	Filamentous algae should be absent. The range of marl lakes exhibit a continuum of trophic condition from oligotrophy to low eutrophy. So the trophic condition for each marl lake type should be maintained. If filamentous algae present. Check for diffuse or point sources of pollution. Check Total P levels in aquifer if aquifer fed, The target level should be set for individual SAC's and an acceptable range established. Increases in Total P level suggest need to move from annual July/August check back to more intensive quarterly samples to verify whether change is real.
		Sediment	Check condition of sediment and measure overall cover of marl every 10 years.	Marl production desirable, although this may be low or absent in oligotrophic hard waters. Some peat slumping acceptable, provided this is not induced due to land drainage.	Check immediate catchment area for drainage or land use change which might induce high sediment loads to enter system.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		Hydrology	Check water level in July annually.	Maintenance of stable water level desirable, although seasonal fluctuations expected.	Water level change downwards acceptable only in dry years. If ditch level lowering due to outside water demands such as land drainage or abstraction then counter measures need to be instigated.
22.13 Natural eutrophic lakes with Magnopotamion or Hydrocharitoid type vegetation.	NVC types: A3 A9 A13 A4 Types '7', '8', '9' and '10' of the GB Standing Water Classification.	Extent of community.	Check extent of beds in July/August every 4 years.	Extensive beds of submerged macrophytes should be present. Maintain mixed community.	Submerged vegetation characterised by broad leaved <i>Potamogeton</i> species such as <i>Potamogeton perfoliatus</i> , <i>P. lucens</i> , <i>P. crispus</i> , <i>P. natans</i> , <i>P. x salicilifolius</i> , <i>P. coloratus</i> , <i>P. polygonifolius</i> , <i>P. gramineus</i> , <i>P. alpinus</i> and <i>Hydrocharitoid</i> type vegetation. <i>Hydrocharis morsus-ranae</i> is a very rare associate with the <i>Magnopotamion</i> in the UK. Its community components are present, however, mainly <i>Spirodela polyrhiza</i> , <i>Lemna minor</i> , <i>Hippuris vulgaris</i> , <i>Utricularia vulgaris</i> and <i>Apium inundatum</i> . Community should be mixed and no one species should be present above 40% level of total amount of macrophyte presence.
Standing water-ditch system		Extent of <i>Potamogeton</i> species <i>Magnopotamion</i> .	Check species presence in July/August every 4 years.	Maintain species presence of all <i>Magnopotamion</i> and fine leaved <i>Potamogetons</i> .	No one <i>Potamogeton</i> species should be present above 40% level of total amount or level of macrophyte presence (see Water Quality comment).

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		Extent of nationally scarce or threatened species.	Establish population size and position of nationally scarce, rare or threatened species over a period of 3 years, on a quarterly basis; thereafter every two years in July/August.	Maintain presence of all nationally scarce, rare or threatened plant species.	Nationally scarce, rare or threatened species can vary in population size and extent due to temporal/seasonal changes in climate which affects physical variables such as water temperature.
		Water quality	Arrange for analysis of quarterly measurements of Total P for first three years; thereafter annually in July/August.	Maintain water quality particularly Total P levels. For southern systems 100 $\mu\text{g l}^{-1}$ or below, down to 65 $\mu\text{g l}^{-1}$.	The variable targets for Total P reflects the geographical range of this trophic state. The target for Total P should be set for individual SAC's and an acceptable range established. Increases in Total P suggest a need to move from annual July/August check, back to more intensive quarterly samples to verify whether change is real. Also check for cover shifts of macrophytes and dominant presence of pollution tolerant species above 40% level such as <i>Potamogeton pectinatus</i> , <i>Myriophyllum spicatum</i> and/or <i>Ceratophyllum demersum</i> .
		Water quantity	Check ditch levels during July/August.	Maintain hydrology of ditch system.	Hydrology involves not only ditch levels but flushing rates; prevent lowering or raising of ditch level through modification of outfalls. With ditch systems aim for constant high water table throughout the year Water abstraction may represent a significant issue through the reduction of ground water and flushing flows into marginal ditch systems.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		Sediment	Check for excessive growths of individual macrophytes ie above 40%.	Maintain sediment quality and quantity.	Effects of increased macrophyte growth also relates to water quality; if this is at target levels, then enrichment of sediments is an issue if broad leaved <i>Potamogeton</i> species decline and fine leaved <i>Potamogeton pectinatus</i> increases above 40% level or <i>Myriophyllum spicatum</i> / <i>Ceratophyllum demersum</i> become dominant. Introduced fish might through sediment disturbance move sites out of favourable condition. Check for increases in siltation from catchment use changes or changes in sewage treatment.
River	Otter <i>Lutra lutra</i>	Water quality	EA scale	"Good", with no pollution incidents	Refer to Environment Agency for data
		Flow rate	Mean annual flow rate	No reduction attributable to increased abstraction.	Data from Environment Agency
		Site integrity	Total area	No reduction of fragmentation of area	
		Fish stocks	EA assessment	Fish stocks appropriate to the nutrient status of the river No significant decline in fish biomass or species diversity	Refer to Environment Agency for sample data
		Disturbance	Extent of public access to river	No significant change to river or bankside usage; no significant development	

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		Bankside cover	Proportion of bank lined with trees, scrub or other thick cover	No overall permanent decrease	Some change acceptable as long as it is appropriately mitigated
		Presence of otters	Signs of otters	Signs of otters found at least once per year	Use data from national or county surveys
All habitats: Fen meadow, Marginal and Inundation, Standing Water	Annex 1 species of European importance and migratory species of European importance.	Extent of habitat.	Area (ha), measured periodically (frequency to be determined).	No significant decrease from reference level.	For all habitats for all qualifying species. Methodology for assessing target to be determined. Reference level to be determined.
		Disturbance in roosting and feeding areas	Reduction or displacement of birds, measured periodically (frequency to be determined).	No significant displacement of birds attributable to human disturbance in relation to reference level.	All qualifying breeding and wintering annex 1 and migratory species. Methodology for assessing target to be determined. Reference level to be determined.
All habitats: Fen meadow, Marginal and Inundation, Standing Water	Annex 1 species of European importance.	Food Availability	Abundance of live mammals and birds, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of food species year round in relation to reference level.	Small-medium sized mammals (voles, mice, rabbits) and birds (pipits to ducks) are important prey in the breeding season for marsh harriers and during the winter for hen harriers. Methodology for assessing target to be determined. Reference level to be determined.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Standing Water	Migratory species of European importance.	Food Availability	Presence and abundance of aquatic plants, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of food species during the winter season in relation to reference level.	<i>Scirpus, Eleocharis, Carex, Potamogeton</i> and <i>Glyceria</i> for shoveler. Methodology for assessing target to be determined. Reference level to be determined.
Standing Water	Migratory species of European importance.	Food availability	Presence and abundance of aquatic invertebrates, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of prey species during the winter season in relation to reference level.	Hydrobia, crustaceans, caddisflies, diptera and beetles are important for shoveler. Methodology for assessing target to be determined. Reference level to be determined.
Standing Water	Migratory species of European importance.	Water depth	Areas of shallow medium and deep water (feeding), measured periodically (frequency to be determined).	Water depths should not deviate significantly during the winter season.	Shoveler require a water depth of <30cm. Methodology for assessing target to be determined.



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pSAC: Overstrand Cliffs

Component SSSI: Overstrand Cliffs

Conservation objective for the European Interest on the SSSI

The conservation objective for the European interest on the SSSI is :

subject to natural change, to maintain, in favourable condition, the:

- vegetated sea cliffs of the Atlantic and Baltic coasts

* maintenance implies restoration if the feature is not currently in favourable condition.

The Conservation Objectives for Overstrand Cliffs possible Special Area of Conservation are, in accordance with para C 10 of PPG 9, the reasons for which the pSAC was proposed.

Favourable Condition Table for Overstrand Cliffs SSSI

The Favourable Condition Table will be used by English Nature and other relevant authorities to determine if a site is in favourable condition. Favourable condition is achieved when the targets given below are met.

The favourable condition table should inform the scope and nature of any 'appropriate assessment' under the Habitats Regulations, but an appropriate assessment will also require consideration of issues specific to the individual plan or project. The favourable condition table does not by itself provide a comprehensive basis on which to assess plans and projects as required under Regulations 20-21, 24, 48-50 and 54 - 85. The scope and content of an appropriate assessment will depend upon the location, size and significance of the proposed project. English Nature will advise on a case by case basis.

Following an appropriate assessment, competent authorities are required to ascertain the effect on the integrity of the site. The integrity of the site is defined in para C10 of PPG9 as the coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified. The determination of favourable condition is separate from the judgement of effect upon integrity. For example, there may be a time-lag between a plan or project being initiated and a consequent adverse effect upon integrity becoming manifest in the condition assessment. In such cases, a plan or project may have an adverse effect upon integrity even though the site remains in favourable condition.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Maritime Cliff	Vegetated sea cliffs of the Atlantic and Baltic coasts	Extent of cliff	Length (km) and/or area (ha) of sea cliff capable of supporting vegetated sea cliff communities. Measured at least once per reporting cycle.	The overall length and/or area of the cliff habitat of the site is maintained taking into account natural variation. The length is the existing length of the site from eastern to western boundary.	This attribute will be important for all cliff types. On near-vertical cliffs it may be difficult to assess area, and a length measurement may be more appropriate. On less steep cliffs area may be measurable. This should be measurable by aerial photography at Overstrand. The area of suitable habitat behind a receding cliff line is also important, though outside the SAC.
Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		Mobility	Percentage of linear extent and area of cliff structure and geomorphological processes not immediately constrained by introduced structures or landforms. Measured once per reporting cycle.	No increase in linear extent or area constrained by introduced structures or landforms.	An important aspect of this habitat is the modification of vegetation patterns in response to natural and geomorphological coastal processes without constraints. Introduction of or increase in physical constraints would reduce the mobility of the cliff and reduce the range of communities which represent this interest

					feature. Information on existing coast protection is available from the SMP.
		Physical features supporting vegetation patterns/zonation	Assessment of distribution of main zones in relation to cliff behavioural units and distance from maritime influence. Measured once per reporting cycle.	Maintain the range of physical conditions arising from variation in geology and geomorphology, profile, stability, degree of maritime exposure, drainage, aspect, geographical location and history of management. Presence of flushes and no increase in sea defences are key indicators.	Changes in patterns are reflected in changes to the profile and stability of the supporting cliff face which will vary from site to site and will vary over time. Some cliffs exhibit long-term stability, with episodic landslide movement, others erode more continually. Overstrand is perhaps prone to episodic landslips though some erosion at the foot of the cliffs is continuous at least in Winter. Changes to patterns are to be expected, especially in dynamic systems. Can be assessed from air photographs and site-based surveys. See Site Management Brief for Overstrand & also Sidstrand Trimingham for information on geomorphological aspects of cliffs.
Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		Vegetation composition maritime grassland communities characteristic of the site	Presence of vegetation communities characteristic of maritime grassland. These are difficult to characterise but include vegetation with similarities to SD8 and perhaps MC8 reflecting the sandy sometimes calcareous nature of some of the till which forms the cliffs. NVC communities characterised by <i>Holcus lanatus</i> , <i>Festuca rubra</i> , <i>Anthyllis vulneraria</i> , <i>Lotus corniculatus</i> , <i>Hypochoeris radicata</i> , <i>Plantago lanceolata</i> and <i>Carex arenaria</i> .. Assess at least once per reporting	Maintain range of maritime grassland communities, taking account of natural variation. Maintain unimproved cliff top grassland along the whole stretch of cliffs.	Individual sites will exhibit different patterns and range of of vegetation types depending on site characteristic and management history. See 1986, 1991 survey s(in file) for only detailed information. Some of these communities can be difficult to assess because of their inaccessibility and because the soft cliff habitat is not adequately covered in the NVC. .

			cycle.		
Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		Vegetation of soft cliffs and other communities characteristic of the site	Vegetation composition of other communities forming a complex pattern reflecting different degrees and stages of instability, drainage and other physical characteristics. The components of this pattern may include wet flush/seepage communities, dominated by <i>Equisetum palustre</i> (also presence of <i>Dactylorhiza incarnata</i> var <i>coccinea</i>) and variants with <i>Scirpus maritimus</i> and <i>Phragmites</i> . Bryophytes notably <i>Riccardia sinuata</i> , <i>Aneura pinguis</i> & <i>Pellia epiphylla</i> locally important. Scrub with <i>Hippophae</i> and scrub woodland communities, ruderal and bracken communities. Flush communities are particularly important Assess at least once per reporting cycle.	Maintain range of transitions and other communities previously recorded on the site, taking account of natural variation. Not possible to set targets for area but would expect presence of flush communities, ruderal communities and scrub as it is the range of vegetation types determined by the unstable nature of the cliffs which is important on this site.	Vegetated sea cliff sites on soft geology in more sheltered locations (as at Overstrand) are likely to support variants of wet flush/seepage/mire communities, scrub/woodland communities, ruderal and bracken communities, which may be subject to maritime influence. The diversity of habitats on sea cliff sites is promoted by the inherent instability of the substrate which maintains a range of successional stages. Surveys in 1986 (Thomas) and 1991(Radley et al) provide useful baseline data.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		Vegetation negative indicators	Presence of negative indicator species including non-native species, invasive species indicative of changes in nutrient status and species not characteristic of typical communities. Most likely if permanent grassland was lost on the cliff top. Assess at least once per reporting cycle.	No further increase in species not typically associated with the communities that define the feature . Extensive spread of <i>Acer pseudoplatanus</i> and <i>Hippophae</i> would be detrimental.	Changes in the extent and cover of invasive species usually indicate a change in conditions on a site, often as a result of anthropogenic activities which may promote rapid expansion or increase in cover. Such species may include those identified as negative indicators for grasslands e.g. <i>Cirsium arvense</i> , <i>Senecio jacobaea</i> , <i>Urtica dioica</i> , together with non-native species eg <i>Acer pseudoplatanus</i> . However this requires care in interpretation as some ruderal communities may be present naturally on a cliff site eg <i>Tussilago</i> dominated communities at Overstrand. .



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pSPA: Breckland
Component SSSI: Old Bodney Camp

Conservation objective for the European Interest on the SSSI

The conservation objectives for the European interests on the SSSI are :

to maintain*, in favourable condition, the habitats for the populations of the Annex 1 species⁺, of European importance, with particular reference to

- heathland
- acid grassland
- chalk grassland and/or inland dune communities

⁺ Stone curlew

* maintenance implies restoration if the feature is not currently in favourable condition.

The Conservation Objectives for Breckland proposed Special Protection Area are, in accordance with para C 10 of PPG 9, the reasons for which the SPA was classified.

The Breckland pSPA includes land within:

Barnhamcross Common SSSI	High Lodge, Mildenhall SSSI
Barnham Heath SSSI	How Hill Track SSSI
Beeches Pit, West Stow SSSI	Lakenheath Warren SSSI
Berner's Heath, Icklingham SSSI	Little Heath, BarnhamSSSI
Bridgham and Brettenham Heaths SSSI	Old Bodney Camp SSSI
Cavenham - Icklingham Heaths SSSI	Rex Graham Reserve SSSI
Cranwich Camp SSSI	Stanford Training Area SSSI
Cranberry Rough, Hockham SSSI	Thetford Golf Course and Marsh SSSI
Deadman's Grave, Icklingham SSSI	Thetford Heath SSSI
East Wretham Heath SSSI	Wangford Warren and Carr SSSI
Eriswell Low Warren SSSI	Warren Hill SSSI
Field Barn Heaths, Hilborough SSSI	Weather and Horn Heaths SSSI
Foxhole Heath, Eriswell SSSI	Weeting Heath SSSI
Gooderstone Warren SSSI	West Stow Heath SSSI
Grime's Graves SSSI	

The Favourable Condition Table will be used by English Nature and other relevant authorities to determine if a site is in favourable condition. Favourable condition is achieved when the targets given below are met.

The favourable condition table should inform the scope and nature of any 'appropriate assessment' under the Habitats Regulations, but an appropriate assessment will also require consideration of issues specific to the individual plan or project. The favourable condition table does not by itself provide a comprehensive basis on which to assess plans and projects as required under Regulations 20-21, 24, 48-50 and 54 - 85. The scope and content of an appropriate assessment will depend upon the location, size and significance of the proposed project. English Nature will advise on a case by case basis.

Following an appropriate assessment, competent authorities are required to ascertain the effect on the integrity of the site. The integrity of the site is defined in para C10 of PPG9 as the coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified. The determination of favourable condition is separate from the judgement of effect upon integrity. For example, there may be a time-lag between a plan or project being initiated and a consequent adverse effect upon integrity becoming manifest in the condition assessment. In such cases, a plan or project may have an adverse effect upon integrity even though the site remains in favourable condition.

Annual counts for qualifying bird species will be used by English Nature, in the context of five year peak means, together with available information on UK population and distribution trends, to assess whether the SPA is continuing to make an appropriate contribution to the Favourable Conservation Status of the species across Europe.

Operational feature	Criteria feature	Attribute	Measure	Target	Comment
All habitats; heathland, acid grassland, chalk grassland and/or inland dune communities	Annex 1 populations of European importance: stone-curlew	Extent and distribution of habitat	Area, measured periodically (frequency to be determined)	No significant decrease from reference level.	Methodology for assessing target to be determined. Reference level to be determined.
	Annex 1 populations of European importance: stone-curlew	Disturbance	Reduction or displacement of birds, measured periodically (frequency to be determined)	No significant reduction or displacement of birds attributable to human disturbance in relation to reference level.	Methodology for assessing target to be determined. Reference level to be determined.
	Annex 1 population of European importance: stone-curlew	Food availability -	Abundance of soil and dung invertebrates, measured periodically (frequency to be determined)	Presence and abundance of prey species should not deviate significantly from reference level	Including e.g. beetles, grasshoppers, flies, earthworms, snails, slugs. Methodology for assessing target to be determined. Reference level to be determined.
	Annex 1 population of European importance: stone-curlew	Vegetation characteristics	Extent and proportions of patches of at least half-hectare with vegetation less than 2cm high and at least 10% bare ground and unrestricted views over 200m, patches of medium height vegetation for roosting, measured periodically (frequency to be determined).	No significant decrease in extent and proportions of patches of at least half-hectare with vegetation less than 2cm high and at least 10% bare ground and unrestricted views over 200m, patches of medium height vegetation for roosting, measured periodically; from reference level.	Methodology for assessing target to be determined. Reference level to be determined.



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cSAC: North Norfolk Coast
SPA: North Norfolk Coast
Component SSSI: North Norfolk Coast

Conservation Objectives for the European Interest on the SSSI

The Conservation Objectives for the European interest features on the SSSI are:

Subject to natural change, to maintain*, in favourable condition, the:

- Coastal lagoons (1))
- Mediterranean and thermo-Atlantic halophilous scrubs (*Sarcocornetea fruticosi*) (1 & 2)
- Glasswort and other annuals colonizing mud and sand (2)
- Atlantic saltmeadows (2)

The Favourable Condition Table will be used by English Nature and other relevant authorities to determine if a site is in favourable condition. Favourable condition is achieved when the targets given below are met.

The favourable condition table should inform the scope and nature of any ‘appropriate assessment’ under the Habitats Regulations, but an appropriate assessment will also require consideration of issues specific to the individual plan or project. The favourable condition table does not by itself provide a comprehensive basis on which to assess plans and projects as required under Regulations 20-21, 24, 48-50 and 54 - 85. The scope and content of an appropriate assessment will depend upon the location, size and significance of the proposed project. English Nature will advise on a case by case basis. Following an appropriate assessment, competent authorities are required to ascertain the effect on the integrity of the site. The integrity of the site is defined in para C10 of PPG9 as the coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified. The determination of favourable condition is separate from the judgement of effect upon integrity. For example, there may be a time-lag between a plan or project being initiated and a consequent adverse effect upon integrity becoming manifest in the condition assessment. In such cases, a plan or project may have an adverse effect upon integrity even though the site remains in favourable condition.

Annual counts for qualifying bird species will be used by English Nature, in the context of five year peak means, together with available information on UK population and distribution trends, to assess whether the SPA is continuing to make an appropriate contribution to the Favourable Conservation Status of the species across Europe.

Operational feature	Criteria feature	Attribute	Measure	Target	Comments
Lagoons	Coastal lagoon	Extent of lagoon	<p>A) Area(ha) of lagoon basin, measured at least once per reporting cycle</p> <p>B) Area (ha) of water occupying the basin measured at least once during the reporting cycle at the same time of year (preferably in late winter/early spring and late summer)</p>	<p>A) No decrease in extent from an established baseline, subject to natural change B) At least 60% of the basin filled with water at all states of the tide and all year</p> <p>The target is no net loss from 15.1ha. No decrease in the extent of more stable lagoons</p> <p>NB From 1984 to 1996 net area reduced from 15.35ha to 15.1ha. Trend = combination of natural processes and reconstruction of shingle sea defences. Any further loss should be offset by replacement <i>in situ</i></p> <p>Previous surveys undertaken in late summer/autumn)</p>	<p>A) Extent is an attribute on which reporting is required by the Habitats Directive. Extent influences both sensitivity of the habitat and (together with shape, i.e. length:breadth ratio) diversity of biological community.</p> <p>Percolation lagoons formed by a sedimentary barrier are relatively short lived, even under natural conditions, due to progression of the barrier landward in the long term and infilling by single in the short term due to storms. However, the net extent of the lagoon may also be impacted by presence of man-made structures to landward constraining migration of the habitat</p> <p>The lagoon resource includes several sites, i.e Broadwater, Salt's Hole, Abraham's Bosom and Blakeney spit lagoons.</p> <p>B) Critical to both the definition and maintenance of a lagoon, and the community of species it supports, is the retention of most or all of the water mass within the system at low water in the adjacent estuary or sea.</p> <p>In most cases the area recorded in past surveys is B). Extent of water in late winter/spring may be taken as the likely extent of the lagoon basin. Extent of water in late summer is likely to be less than the extent of the basin.</p>
		Water depth	Water depth: Average water depth within lagoon basin (metres) at low tide, measured at least once during the reporting cycle, measured at same time of year (preferably in late winter/early spring and late summer).	Average water depth should not deviate significantly from an established baseline subject to natural change (to be established for individual sites from previous surveys)	The influence of depth is a balance between sufficiently shallow to enable light penetration, and therefore photosynthesis, and sufficiently deep to submerge vegetation (and thereby affect oxygenation, food resource, habitat diversity and colonization by lagoonal fauna), determining temporal duration of stratification, and buffering against environmental change, particularly dehydration.
		Isolating	Length, width and height	No change in measure from	The presence of an isolating barrier is fundamental to the

		barrier - presence and nature	(relative to basin and to tidal levels) of barrier. Presence of percolation flow at selected lagoons.	established baseline, subject to natural change. As a dynamic feature the shingle ridge will change naturally in all dimensions. However, there should be no decline in dimensions over the reporting cycle.	structure and function of a saline lagoon (indeed the nature of the barrier and degree of separation from the sea defines the type of lagoon in the UK). The lagoons at this site are percolation lagoons formed either as natural depressions behind a shingle ridge or by artificial isolation of saltmarsh creeks. The shingle ridge is currently sufficiently high to prevent inundation by sea water except during storm tides. However, natural changes to the ridge and increases in sea levels may make inundation a more frequent occurrence. Survey above and beyond established monitoring programme may be required following exceptional weather events.
		Salinity regime	Seasonal averages (%) to be measured at least once during the reporting cycle (preferably in late winter/early spring and later summer to indicate seasonal low and high)	Average seasonal salinity, and seasonal maxima and minima, should not deviate significantly from an established baseline subject to natural change.	Salinity is critical to both the structure and function of a lagoon, e.g. in defining the habitat, contributing to diversity within a site, and determining what species are present. The evolution of a specialist lagoonal community appears to be related to intrinsic variation in salinity both in time (short-term - tidal, seasonal) and space. The long-term natural trend at some percolation lagoons is to become freshwater as a result of siltation within the lagoon preventing percolation. However, overtopping of the shingle ridge may cause the Blakeney Spit lagoons to exhibit high to hypersaline salinity levels in the period subsequent to overtopping. It is essential that salinity is measured at a similar time of the year and state of tide on a site. Salinity of the adjacent open coastal waters should be measured at the same time. See Bamber (1997) for anticipated range for individual lagoons.
		Species composition	Presence and abundance of composite species, measured at least once during the reporting cycle, measured at same time of year.	Presence and abundance of composite species should not deviate significantly from the established baseline, subject to natural change. Loss or decline of characteristic species, in particular, should	Composite species are important contributors to the structure of the saline lagoon habitat. The community will reflect to varying degrees the structure and function of the habitat as a whole. Baseline survey provides a species checklist for the whole site which includes the following characteristic species, i.e. specially adapted or restricted to saline lagoons: <i>Idotea chelipes</i> , <i>Hydrobia ventrosa</i> , <i>Hydrobia neglecta</i> , <i>Palaemonetes varians</i> , <i>Cerastoderma</i>

				trigger a management response.	<i>glaucum</i> , <i>Nematostella vectensis</i> , <i>Gammarus insensibilis</i> , <i>Paramysis nouveli</i> , <i>Littorina saxatilis</i> agg. and <i>Ruppia</i> spp. See Bamber (1997) for which particular components of the biota to focus on at each lagoon. Where infauna are monitored associated monitoring of the sediment should be undertaken.
<i>Salicornia</i> and other annuals colonising mud and sand		Extent	Area (hectares) measured once during the reporting cycle.	No decrease in extent from an established baseline subject to natural change. No increase at the expense of low- mid-saltmarsh communities.	Subject to periodic and seasonal variation- may need to be assessed over a period of time.
<i>Salicornia</i> and other annuals colonising mud and sand		Topography	Surface elevation of saltmarsh and foreshore measured periodically (frequency to be determined).	No change in surface elevation of saltmarsh sediments and foreshore, subject to natural change.	Topography is an important physical factor which influences colonisation of mud and sand by saltmarsh plants - this will only occur if adequate sediment is accreting - this is influenced by extent of fronting mudflat which can dissipate wave energy and affect availability of suspended sediment. Sediment is deposited on the saltmarsh surface with each tide, with transport along creeks an important element of this, allowing the surface to build.
		Creek patterns	Creek density and morphology measured periodically during reporting cycle (frequency to be determined).	No alteration of creek patterns from an established baseline, subject to natural change.	Creeks absorb tidal energy and assist with the delivery of sediment into saltmarshes. The efficiency of this process depends on creek pattern. Creek density is influenced by vegetation cover, suspended sediment load and tidal influence. Creeks allow pioneer vegetation to be established along their banks higher into the saltmarsh system. Headward lengthening and deepening of creeks can indicate changes are occurring in the saltmarsh system.
		Nutrient enrichment - algal mat cover	Area and thickness of algal mat, measured during summer periodically (frequency to be determined).	Area and thickness of algal mats should not deviate significantly from an established baseline, subject to natural change.	Algal mats are often associated with the pioneer saltmarsh communities, and are important primary producers, but can be affected by changes to water quality - eutrophication may lead to expansion and smothering of vegetation, or pollution can cause a decline which can lead to destabilisation of sediment surfaces and initiate erosion. An increase in algal cover can also indicate a decline in grazing invertebrates.
<i>Salicornia</i> and		Characteristic	Presence and abundance of	Presence and abundance of	These communities are important precursors to more

other annuals colonising mud and sand		communities (listed in appendices IV & V)	characteristic communities or sub-communities measured periodically (frequency to be determined)	characteristic communities should not deviate significantly from an established baseline, subject to natural change.	stable vegetation of low to mid marsh. Communities may be dynamic in their distribution and are linked with the physical processes operating on the site e.g., topography., creek patterns, sea-level rise etc.
		Species composition of characteristic communities (listed in Appendices IV & V)	Frequency and abundance of constant species, measured periodically (frequency to be determined)	Frequency and abundance of constant species should not deviate significantly from an established baseline subject to natural change.	
Atlantic Salt Meadows		Extent	Area (hectares) measured once during reporting cycle	No decrease in extent of saltmarsh plant communities from the established baseline subject to natural change.	Monitoring will need to take account of the dynamic nature of some of these habitats. Coastal squeeze may result in replacement of Atlantic salt meadows by pioneer saltmarsh. A reduction in extent could be further indicated by ground survey to assess for signs of erosion such as toppled vegetated blocks; cliffing; stepping of saltmarsh edge; signs of roots in intertidal mud; signs of stress/damage to plants. Extent needs to be measured at low tide.
		Creek patterns	Creek density and morphology measured periodically (frequency to be determined)	No significant alteration of creek patterns from an established baseline, subject to natural change.	Creeks absorb tidal energy and assist with the delivery of sediment into saltmarshes. The efficiency of this process depends on creek pattern. Creek density is influenced by vegetation cover, suspended sediment load and tidal influence. Creeks allow pioneer vegetation to be established along their banks higher into the saltmarsh system
Atlantic Salt Meadows		Range of NVC saltmarsh communities	Presence and abundance of characteristic communities or sub-communities and transitions to other habitats measured periodically (frequency to be determined)	No decrease in extent of saltmarsh plant communities from an established baseline, subject to natural change.	A range of community types from low, mid, to upper saltmarsh should be present.
		Species composition of characteristic communities (listed in	Frequency and abundance of constant species of characteristic communities measured periodically (frequency to be determined)	Frequency and abundance of constant species should not deviate significantly from an established baseline, subject to natural change.	The baseline will need to be established by habitat surveys using the National Vegetation Classification (NVC)

		appendix V)			
		Vegetation structure	Range and distribution of varying vegetation heights, measured periodically (frequency to be determined)	Vegetation structure should not deviate significantly from the established baseline, subject to natural change	Vegetation structure is largely affected by the impact of grazing (of wild or domestic herbivores) interacting with different vegetation communities.
	Low Marsh and Low-Mid Marsh communities	Species composition of characteristic communities or sub-communities (listed in appendices IV & V)	Frequency and abundance of constant species, measured once during the reporting cycle	Frequency and abundance of constant species should not deviate significantly from an established baseline, subject to natural change.	Low marsh and low-mid marsh communities can be relatively simple communities or more complex associations of species, and species composition will vary depending on geographical location and other physical factors.
Atlantic Salt Meadows	Mid and Mid-Upper marsh	Species composition of characteristic communities and sub-communities (listed in appendices IV & V)	Frequency and abundance of constant species of each community, measured once during the reporting cycle	Frequency and abundance of constant species should not deviate significantly from an established baseline, subject to natural change.	Mid-marsh and mid-upper marsh communities are generally more complex than those of the lower marsh.
	Upper Marsh	Species composition of characteristic communities and sub-communities (listed in appendices IV & V)	Frequency and abundance of constant species, measured once during the reporting cycle	Frequency and abundance of constant species should not deviate significantly from an established baseline, subject to natural change	Upper marsh communities experience less frequent tidal inundation and contain a broader range of species than lower marsh communities.
	Transitional communities	Range of transitional communities from saltmeadow to other	Extent of transitional communities measured once during the reporting cycle	No decrease in extent of transitional communities from an established baseline, subject to natural change.	Sites with a complete sequence of habitats from saltmeadow to coastal, terrestrial or freshwater/brackish habitats are the most valuable for nature conservation. Such habitats can include sand dunes, shingle, reedbeds, and woodland.

		communities			
Mediterranean and thermo-Atlantic halophilus scrubs		Extent	Length/area of scrub along drift line measured once during the reporting cycle.	No decrease in linear extent/area from established baseline, subject to natural change	Community is generally rather open. Characteristic of interfaces between saltmarsh and other coastal and transitional habitats. Tidal inundation infrequent
		Absence of landward constraints	Percent of linear extent not immediately constrained by artificial structures, measured periodically (frequency to be determined).	No increase in linear extent constrained by artificial structures from established baseline.	Sea level rise may squeeze the habitat against sea walls. The extent of this habitat which can migrate inland as sea levels rise are likely to be especially valuable
		Range of NVC saltmarsh communities (listed in appendices IV & V)	Frequency and abundance of constant species for each community or sub-community measured periodically (frequency to be determined).	Frequency and abundance of constant species should not deviate significantly from an established baseline, subject to natural change.	This community is often associated with the upper saltmarsh community. It is limited in its distribution to south-east England and is unlikely to be found outside existing SACs.



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cSAC: North Norfolk Coast
SPA: North Norfolk Coast
Component SSSI: North Norfolk Coast

Conservation Objectives for the European Interest on the SSSI

The Conservation Objectives for the European interest features on the SSSI are:

Subject to natural change, to maintain*, in favourable condition, the:

- Coastal lagoons (1)
- Fixed dunes with herbaceous vegetation ('grey dunes') (1)
- Embryonic shifting dunes (1)
- Humid dune slacks (1)
- Mediterranean and thermo-Atlantic halophilous scrubs (*Sarcocornetea fruticosi*) (1 & 2)
- Perennial vegetation of stony banks (1)
- Shifting dunes along the shoreline with *Ammophila arenaria* ('white dunes') (1)
- Mudflats and sandflats not covered by seawater at low tide (2)
- Glasswort and other annuals colonizing mud and sand (2)
- Atlantic saltmeadows (2)

(1) North Norfolk Coast cSAC feature (2) Wash & North Norfolk Coast cSAC feature

Subject to natural change to maintain*, in favourable condition, the habitats for the population of:

- otter (*Lutra lutra*)
- common seal (*Phoca vitulina*)
- petalwort (*Petalophyllum ralfsii*)

Subject to natural change, to maintain*, in favourable condition, the habitats for the populations of Annex 1 bird species + of European importance, with particular reference to:

- coastal waters
- sand and shingle
- intertidal mudflats and sand flats
- intertidal mudflats and sandflats with *Zostera*

- saltmarsh
- swamp, marginal and inundation communities
- marshy grassland

+ Avocet, Sandwich Tern, Common Tern, Little Tern, Bittern, Marsh Harrier

Subject to natural change, to maintain*, in favourable condition, the habitats for the populations of migratory species + of European importance, with particular reference to:

- coastal waters
- sand and shingle
- intertidal mudflats and sand flats
- intertidal mudflats and sandflats with *Zostera*
- saltmarsh
- swamp, marginal and inundation communities
- marshy grassland

+ Dark-bellied brent goose, Wigeon, Knot

Subject to natural change, to maintain*, in favourable condition, the habitats for the populations of waterfowl that contribute to the wintering waterfowl assemblage of European importance, with particular reference to:

- coastal waters
- sand and shingle
- intertidal mudflats and sand flats
- intertidal mudflats and sandflats with *Zostera*
- saltmarsh
- swamp, marginal and inundation communities
- marshy grassland

* maintenance implies restoration if the feature is not currently in favourable condition.

The Conservation Objectives for the North Norfolk Coast Special Protection Area and the North Norfolk Coast candidate Special Area of Conservation are, in accordance with para C10 of PPG 9, the reasons for which the SPA was classified and the cSAC was designated.

The entry of 30 January 1996 on the Register of European Sites gives the reasons for which the SPA was classified.

The Conservation Objectives for the Wash and North Norfolk European marine site were published by English Nature on 14 June 2000.

The Favourable Condition Table will be used by English Nature and other relevant authorities to determine if a site is in favourable condition. Favourable condition is achieved when the targets given below are met.

The favourable condition table should inform the scope and nature of any ‘appropriate assessment’ under the Habitats Regulations, but an appropriate assessment will also require consideration of issues specific to the individual plan or project. The favourable condition table does not by itself provide a comprehensive basis on which to assess plans and projects as required under Regulations 20-21, 24, 48-50 and 54 - 85. The scope and content of an appropriate assessment will depend upon the location, size and significance of the proposed project. English Nature will advise on a case by case basis. Following an appropriate assessment, competent authorities are required to ascertain the effect on the integrity of the site. The integrity of the site is defined in para C10 of PPG9 as the coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified. The determination of favourable condition is separate from the judgement of effect upon integrity. For example, there may be a time-lag between a plan or project being initiated and a consequent adverse effect upon integrity becoming manifest in the condition assessment. In such cases, a plan or project may have an adverse effect upon integrity even though the site remains in favourable condition.

Annual counts for qualifying bird species will be used by English Nature, in the context of five year peak means, together with available information on UK population and distribution trends, to assess whether the SPA is continuing to make an appropriate contribution to the Favourable Conservation Status of the species across Europe.

. Favourable condition table for sand dune systems

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Sand dune	Fixed dunes with herbaceous vegetation	Extent	Area (ha) of fixed dunes with herbaceous vegetation measured once per reporting cycle	No decrease in extent from reference level (to be established for individual sites from previous survey). Extent must take account of natural variation of this habitat as a result of succession to and interaction with other dune habitats. Specific targets to be locally derived. In most cases bare sand in fixed dunes with herbaceous vegetation should not exceed 25% cover	Judgements in changes to extent/area will have to take particular care to distinguish changes as a result of natural succession from changes resulting from anthropogenic actions because of the complex nature of this habitat. See the surveys of Holme (Report 69), Thornham, Titchwell & Brancaster (Report70), Scolt (Report 71) Holkham (Report 72) and Blakeney Point (Report 73). Work on ChaMPs in 2000-2002 should give better GIS based figures.
		Substrate	Presence of sand with naturally derived organic matter in surface layers. Assess once per reporting cycle	Maintain substrate composition of sand and organic matter that supports the vegetation types typical of fixed dunes, taking account of natural variation.	Substrate composition is an important determinant of sward composition. Increases in organic content in particular can promote expansion of negative indicator species.
		Range and zonation of vegetation communities	Presence of vegetation communities and patterns of distribution characteristic of fixed dunes with herbaceous vegetation . Sample at least once during reporting cycle with the assessment being carried out at the optimal time in the growing season (May-August, but may vary according to local conditions)	Maintain range of fixed dune communities previously recorded on the site and transitional forms with characterising species, taking account of natural variation. These communities are likely to include one or more of the following NVC dune communities: <i>Ammophila arenaria-Arrhenatherum elatius</i> SD9; <i>Festuca rubra-Galium verum</i> SD8; <i>Carex arenaria-Cornicularia aculeata</i> SD11; <i>Ammophila arenaria- Festuca rubra</i> SD7. Each site will require local baselines and targets to be established	Vegetation composition is influenced by age of dunes and degree of dune stability, climate and management, and communities will often be present in complex mosaics. Individual sites will exhibit different patterns and range of vegetation types depending on site size, location, history, substratum and patterns of human use. Previous surveys should be used to establish the range of characteristic communities for each site. See the surveys of Holme (Report 69), Thornham, Titchwell & Brancaster (Report70), Scolt (Report 71) Holkham (Report 72) and Blakeney Point (Report 73). Important NVC types in North Norfolk are SD7, SD8 & SD11. Work on ChaMPs in 2000-2002 should give better GIS based figures.
		Vegetation structure	Relative proportions of short to tall vegetation. Visual assessment or sampling of height measurements, measured	Maintain range of vegetation heights from short species-rich turf of a few centimetres to taller stands of <i>Ammophila</i> up to 70cm high, taking account of natural variation. Site specific reference levels and targets to	Most areas of fixed dunes exhibit natural variation in vegetation structure which is reflected in the diversity of vegetation. Structural diversity is influenced by grazing of wild and domestic herbivores or other factors. Forms of sward management such as mowing. In

			periodically (frequency to be determined).	be established	North Norfolk fluctuating rabbit populations & rainfall are main determining factors.
		Vegetation-negative indicators	Extent of species not typical of fixed dunes, including scrub/tree cover. Assess scrub/tree cover from air photographs to establish reference level for individual sites.	No increase in negative indicator species or spread of scrub/tree cover at expense of fixed dune vegetation	Negative indicator species are those which occur on enriched soils (e.g. <i>Urtica dioica</i>), or non-native species. Scrub can occur as a component of fixed dune vegetation but its spread is usually limited by grazing, low nutrient status, water balance or intermittent remobilisation of the substrate. Where these conditions are less extreme, scrub can invade. In north Norfolk <i>Hippophaea</i> a potential problem on Holme, <i>Rosa rugosa</i> on Scolt and <i>Pinus</i> sp & <i>Quercus ilex</i> at Holkham.
Sand dune	Humid dune slacks	Extent	Area (ha) of dune slacks measured once per reporting cycle. Can be assessed from area of slack vegetation in growing season or area of standing water at the end of a wet winter (February/March).	Maintain overall extent of dune slacks within a dune system taking account of natural variation.	Dune slacks are low-lying areas in dune systems that are seasonally flooded. They can be very dynamic and interacting with other communities. New dune slacks may be created naturally in dynamic systems and can have 100% bare ground. Remote sensing and photos can be useful in establishing a reference level. See the surveys of Holme (Report 69), Thornham, Titchwell & Brancaster (Report70), Scolt (Report 71) Holkham (Report 72) and Blakeney Point (Report 73). Work on ChaMPs in 2000-2005 should give better GIS based figures.
		Substrate	Presence of sand and naturally-derived organic matter at depths that allow the water table to influence the surface layers	Maintain substrate composition of sand and organic matter that supports this vegetation type, taking account of natural variation. Specific targets to be locally derived	Substrate composition is an important determinant of sward composition.
		Hydrological regime	Proportion of dune slack area with standing water in summer months (July/August) (<i>see comments column</i>)	At least 10% of slack area in whole system with water at /above surface until summer months taking account of natural variation (<i>see comments column</i>)	Level of water table can be indicated by presence of standing water. Rainfall data will be important to help define the range of natural variation. Some sites may already have a dipwell system for assessing level of water table. Water balance relationships in dune systems can be complex and this measure can only provide an indication of one element of this attribute. More detailed site-specific studies may be required to clarify these relationships. <i>Most slacks in north Norfolk do not hold water in the summer months and probably never have done. Natterjack breeding success may be an additional indicator</i>

					<i>Holme & Holkham</i>
		Vegetation composition and zonation	Presence of vegetation communities and patterns of distribution characteristic of humid dune slacks sampled at least once during reporting cycle with the assessment being carried out at the optimal time in the growing season (May-August, but may vary according to local conditions)	Maintain vegetation composed mainly of dune slack communities previously recorded on the site (and transitions to other dune communities) with characterising species, taking account of natural variation. These are likely to include one or more of the following dune slack communities: SD13 <i>Salix repens</i> - <i>Bryum pseudotriquetrum</i> dune slack community SD14 <i>Salix repens</i> - <i>Campyllum stellatum</i> dune slack community SD15 <i>Salix repens</i> - <i>Calliergon cuspidatum</i> dune slack community; ; SD16 <i>Salix repens</i> - <i>Holcus lanatus</i> dune slack community: SD 17 <i>Potentilla anserina</i> - <i>Carex nigra</i> dune slack community: In North Norfolk SD16 only present	Individual sites will exhibit different patterns and range of vegetation types depending on site size, geographical location, history, substrate and patterns of human use. Previous surveys should be used to establish the range for each site. The majority of sites will have been covered by the Sand Dune survey of Great Britain or other site specific surveys. Vegetation composition is influenced by degree of stability, climate and management, and communities will form mosaics with each other In North Norfolk SD16 only present See Sand dune survey reports Holme (Report 69), Thornham, Titchwell & Brancaster (Report70), Holkham Dunes (report 72)
		Vegetation negative indicators	Presence of negative indicator species including non-native species, invasive species indicative of changes in nutrient status and species not characteristic of typical communities.	No further increase in species not typically associated with the communities that define the feature. Local targets will need to be defined.	Changes in the extent and cover of invasive species usually indicate a change in conditions on a site, often as a result of anthropogenic activities which may promote rapid expansion or increase in cover. These are often initiated by changes in management. Such species may include those identified as negative indicators for grasslands e.g. <i>Cirsium arvense</i> , <i>Senecio jacobaea</i> , <i>Urtica dioica</i> , together with non-native species and scrub/trees. <i>Salix & Betula invasion</i> main problem at Holkham
Sand dune	Embryonic shifting dunes	Extent	Length (m) and area (ha) of embryonic shifting dunes, measured at least once per reporting cycle in July/August, and percentage of area supporting at least sparse embryonic dune vegetation	No decrease in linear extent or area from reference level (to be established for individual sites from previous survey). Extent must take account of natural variation of this habitat as a result of dynamic coastal processes. Local target for the percentage of at least sparse embryonic dune vegetation to be established but it should not be less than 10% of the suitable area maintained over a	This attribute is dependent on the continued operation of physical processes at the dune/beach interface and there being sufficient area available between high water mark and more stable dunes to allow the development of embryonic shifting dunes. Judgements in changes to extent/area will have to take particular care to distinguish changes as a result of natural functions from those caused by anthropogenic actions because of the highly variable nature of this habitat. The continued presence of

				10 year period	element of a dune system is a good indicator of the structure and function of a sand dune system. Dunes are only constrained at Brancaster by sea defences.
		Substrate	Presence of exposed beach plain at low tide drying to supply blown sand on to sufficient area for deposition of sand, often associated with drift line organic debris. Assess at least once per reporting cycle.	Sediment supply and deposition and drift line organic debris to be regulated by natural processes	.Annual beach profile monitoring taking place at selected sites by Environment Agency.
		Mobility	Percentage of linear extent and area of substrate suitable for colonisation by embryonic shifting dunes not immediately constrained by introduced structures or landforms, or operations. Measured once per reporting cycle.	No increase in linear extent or area constrained by introduced structures or landforms.	An important aspect of this habitat is its ability to modify its distribution in response to natural dynamic coastal processes. Introduction of physical constraints would reduce the extent of this community and affect the overall structure of the embryonic dune communities. Only a very local problem at Brancaster
		Characteristic species of embryonic shifting dunes	Presence and cover of characterising species, particularly <i>Elytrigia juncea</i> , and/or <i>Leymus arenarius</i> , with other species such as <i>Honkenya peploides</i> , <i>Cakile maritima</i> during the summer months of June, July or August	Maintain the presence and broad distribution of <i>Elytrigia juncea</i> , and/or <i>Leymus arenarius</i> , embryonic dunes allowing for natural variation. As these communities can be very variable, local targets will need to be established, but should not be lower than cover of at least 5% of the area that could be colonised.	Changes in the frequency and abundance of these species should be expected to occur seasonally as a result of natural disturbance by storm events, but communities are sensitive to disturbance by human activities. In accreting systems, the growth of plants should be able to keep pace with the rate of sand deposition. Presence of flowering heads gives some indication of stability-recent embryo dunes often lack flowering heads. Seed and rhizome fragments from adjacent foredunes are an important source of propagules. Often intermixed with <i>Honkenya peploides</i> , <i>Salsola kali</i> , <i>Atriplex sp.</i> , <i>Cakile maritima</i> of the strand line communities.
Sand dune	Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white Dunes)	Extent	Area (ha) of shifting dunes along the shoreline with, <i>Ammophila</i> measured at least once per reporting cycle during the summer months of June, July or August	No decrease in extent from reference level (to be established for individual sites from previous survey). Extent must take account of natural variation of this habitat as a result of dynamic coastal processes and succession to other dune habitats.	This attribute is dependent on the continued operation of physical processes at the dune/beach interface and there being sufficient area available between high water mark and more fixed dunes to allow the development of embryonic shifting dunes. Judgements in changes to extent/area will have to take particular care to distinguish changes as a result

					<p>natural functions vs. anthropogenic actions because of the variable nature of this habitat. The continued presence of this element of a dune system is a good indicator of a structure and function of a sand dune system. Increasing stability will cause it to be reduced in extent</p> <p>See the surveys of Holme (Report 69), Thornham Titchwell & Brancaster (Report 70), Scolt (Report 71) Holkham (Report 72) and Blakeney Point (Report 73). ChaMp will also give GIS info on extent</p>
		Substrate	Presence of blown sand within stands of <i>Ammophila</i>	Maintain supply of wind blown sand and deposition through natural processes	Vegetation of shifting dunes can trap and grow through deposited sand. Blown sand is often evident as bare patches within vegetation or as newly-deposited areas over vegetation.
		Mobility	Percentage of linear extent and area of substrate suitable for colonisation by shifting dunes not immediately constrained by introduced structures or landforms, or operations, measured once per reporting cycle.	No increase in linear extent or area constrained by introduced structures or landforms.	An important aspect of this habitat is its ability to modify its vegetation in response to natural dynamic coastal processes. Mobility of the substrate is essential to maintain vegetation diversity. Introduction of physical constraints would reduce the extent of this community and affect the overall structure of the shifting dune communities. V. L. existing constraints in north Norfolk.
		Range of vegetation communities	Presence of dune communities with active healthy marram grass (<i>Ammophila arenaria</i>) and/or other species at frequencies which characterise this habitat including <i>Carex arenaria</i> ; <i>Ammophila arenaria</i> ; <i>Elymus farctus</i> ; <i>Leymus arenarius</i> ; other drought tolerant annuals and bryophytes	Maintain range of vegetation communities, which characterise this habitat, grading into more stable dune communities. The dynamic nature of this habitat will require site specific targets to be established based on previous surveys of this habitat in conjunction with other dune habitats.	Variation occurs within and between sites in the vegetation communities present, reflecting variation in sand deposition and stability. Bryophytes may occur in more stable areas, but where sand deposition is greatest vegetation will be dominated by <i>Ammophila</i> . <i>Leymus arenarius</i> is less frequent but favours some of the roll-over dunes. Well-developed shifting dunes are almost always associated with other dune habitats.
		Characteristic Species	Presence of one or more of the characteristic special species which may include:	Where previously recorded, characteristic special species of shifting dunes are still present. Targets will need to be defined for individual sites based on existing records.	This habitat type can support a wide range of species, some of which have a restricted range. <i>A. species in north Norfolk are Eryngium maritimum; Euphorbia paralias (rare), Calystegia</i>

			<p><i>Eryngium maritimum;</i> <i>Euphorbia portlandica;</i> <i>Euphorbia paralias;</i> <i>Calystegia soldanella.</i></p> <p>Surveys to establish presence and abundance will need to be carried out in June to August, measured at least once per reporting cycle.</p>		<i>soldanella.</i>
		Lack of disturbance	Proportion of the shifting dune areas where vegetation colonisation/re colonisation is prevented by persistent human disturbance	No increase in area where vegetation colonisation/re colonisation is prevented by human activity	Whist mobile dunes are naturally dynamic, their establishment can be greatly affected by persistent heavy trampling or other activities (beach cleaning) which prevent re colonisation after natural storm events

Favourable Condition Table for vegetated shingle

Operational Feature	Criteria feature	Attribute	Measure	Target	Comments
Vegetated shingle	Perennial vegetation of stony banks	Extent	Area (ha) of perennial vegetation of stony banks, and the area of geomorphological structures supporting them, measured once per reporting cycle	No decrease in extent or area from reference level to be established from previous survey, if available-the UK shingle survey by Sneddon & Randall will provide information for many sites . If no survey is available, this will need to be established at a local level. Extent must take account of natural variation of this habitat as a result of dynamic coastal processes	This attribute is dependent on there being adequate area to support the whole range of vegetation communities which have been previously recorded on the site. Extent of the shingle feature will influence vegetation succession. (See Shingle Survey by Sneddon & Randell) and GIS based information will also become available through the ChaMPs work.
		Mobility	Percentage of linear extent and area of the active zone of shingle feature suitable for colonisation by perennial vegetation of stony banks immediately constrained by introduced structures or landforms, measured once per reporting cycle.	No increase in linear extent or area constrained by introduced structures or landforms.	An important aspect of this habitat in the early stages of the succession near the coast, is its ability to modify its distribution in response to natural dynamic coastal processes. Introduction of physical constraints would reduce the extent of this community and affect the vegetation pattern. On more established stable parts of shingle structures, mobility is a less significant attribute.
		Substrate	Presence of shingle/sand in combination with surface or buried organic material	Maintain proportion of shingle/sand/organic matter, regulated entirely by natural processes.	The combination of inorganic and organic substrate, derived from natural processes, is an important factor in allowing the establishment and development of this type of vegetation. The presence of a fine matrix influences the water balance of the surface layers and is important for plant colonisation.
		Lack of disturbance	Proportion of substrate not showing evidence of human disturbance. This can include evidence of path network proliferation, especially from access points/car parks/throughway; detached clumps of vegetation and broken surface layers; disturbance of bare shingle; loss of sorting and relief of ridge system.	Maintain substrate with sufficiently low levels of human-induced disturbance to allow perennial vegetation to establish and undergo succession	Most sites are likely to have experienced some degree of past disturbance. If this has stopped, recovery of vegetation may be possible, but very slow, if the fine matrix can reestablish . If disturbance is continuous, recovery is unlikely to occur. Infrequent moderate disturbance may, in certain circumstances, initiate successional phases and can lead to the development of modified grassland communities. Main problem at the prime shingle site at Blakeney - Cley is the prevention of new stable areas being created because of regular

					bulldozing for sea defence works.
		Vegetation composition	<p>Presence of vegetation communities characteristic of perennial vegetation of stony banks. Vegetation communities are likely to consist of one or more of the following (characterising species in brackets):</p> <p>pioneer (<i>Lathyrus japonicus</i>, <i>Silene maritima</i>, <i>Crambe maritima</i>, <i>Rumex crispus</i>, <i>Glaucium flavum</i>); lichen/moss communities with less than 30% grasses (including epiphytic species) (<i>Psuedoscleropodium purum</i>, <i>Dicranum scoparium</i>, <i>Cladonia</i> spp.); grassland (<i>Festuca rubra</i>, <i>Armeria maritima</i>, <i>Lotus corniculatus</i>, <i>Arrhenatherum elatius</i>); heath (<i>Pteridium aquilinum</i>, <i>Calluna vulgaris</i>, <i>Erica cinerea</i>); wetland (<i>Phragmites communis</i>, <i>Iris pseudacorus</i>, <i>Epilobium palustre</i>); scrub (<i>Ulex europaeus</i>, <i>Prunus spinosa</i>, <i>Rubus fruticosus</i>)</p>	Maintain range of specialist vegetation and its zonation previously recorded on the site, taking account of natural variation. One or more of the characterising species should be at least frequent for each of the communities present on a site.	Individual sites will exhibit different patterns and range of vegetation types depending on site size, history, substrate and patterns of human use. Previous surveys should be used to establish the range for each site. Many, but not all, sites will have been covered by the Coastal Vegetated Shingle Structures of Great Britain (Sneddon & Randall) or other Site specific surveys (e.g. Dungeness-Ferry & Waters). The range of NVC-equivalent communities for this type of vegetation covers heaths, grasslands, (acid and mesotrophic), sand dunes, scrub, maritime cliff and saltmarsh and mires. Some communities are present as part of a succession following previous disturbance. The older communities at Blakeney relate to acid grasslands and have long term stability because of the compactness of the ground. <i>Cladonia foliacea</i> , <i>Sedum acre</i> are good indicators. Pioneer communities with <i>Honkenya</i> , <i>Glaucium</i> , <i>Silene maritima</i> also present. Wetland communities absent. See Sneddon & Randell
		Vegetation negative indicators	Presence of negative indicator species including non-native species, invasive species indicative of changes in nutrient status and species not characteristic of typical communities	No further increase in species not typically associated with the communities that define the feature. Local targets will need to be defined. and cross-reference to negative indicators for grassland features.	Changes in the extent and cover of invasive species usually indicate a change in conditions on a site, often as a result of anthropogenic activities which may promote rapid expansion or increase in cover. These are often initiated by changes in management. Such species may include those identified as negative indicators for grasslands e.g. <i>Cirsium arvense</i> , <i>Senecio jacobaea</i> , <i>Urtica dioica</i> , together with non-native species and scrub/trees. These will vary from site to site and locally-significant species will need to be defined
		Vegetation patterning	Presence of vegetation patterns related to geomorphological structure (ridges and lows). This may not be present on all sites.	No reduction in extent of vegetation cover exhibiting relationship to geomorphological structure, taking account of natural	Vegetation patterns can be related to the physical characteristics of the substrate. Patterns of ridges and lows in particular reflect the variations in particle size which in turn affect water-holding capacity.

				variation	
		Hydrological conditions	Impact of changes to hydrological conditions on extent and composition of wetland vegetation communities where they have been previously recorded. Wetland communities may not be present on all sites.	Maintain hydrological conditions that will sustain specialist freshwater wetland vegetation communities, subject to natural variation	Wetlands absent from North Norfolk shingle structures

Operational feature	Criteria feature	Attribute	Measure	Target	Comments
Lagoons	Coastal lagoon	Extent of lagoon	<p>A) Area(ha) of lagoon basin, measured at least once per reporting cycle</p> <p>B) Area (ha) of of water occupying the basin measured at least once during the reporting cycle at the same time of year (preferably in late winter/early spring and late summer)</p>	<p>A) No decrease in extent from an established baseline, subject to natural change B) At least 60% of the basin filled with water at all states of the tide and all year</p> <p>The target is no net loss from 15.1ha. No decrease in the extent of more stable lagoons</p> <p>NB From 1984 to 1996 net area reduced from 15.35ha to 15.1ha. Trend = combination of natural processes and reconstruction of shingle sea defences. Any further loss should be offset by replacement <i>in situ</i></p> <p>Previous surveys undertaken in late summer/autumn)</p>	<p>A) Extent is an attribute on which reporting is required by the Habitats Directive. Extent influences both sensitivity of the habitat and (together with shape, i.e. length:breadth ratio) diversity of biological community.</p> <p>Percolation lagoons formed by a sedimentary barrier are relatively short lived, even under natural conditions, due to progression of the barrier landward in the long term and infilling by single in the short term due to storms. However, the net extent of the lagoon may also be impacted by presence of man-made structures to landward constraining migration of the habitat</p> <p>The lagoon resource includes several sites, i.e Broadwater, Salt's Hole, Abraham's Bosom and Blakeney spit lagoons.</p> <p>B) Critical to both the definition and maintenance of a lagoon, and the community of species it supports, is the retention of most or all of the water mass within the system at low water in the adjacent estuary or sea.</p> <p>In most cases the area recorded in past surveys is B). Extent of water in late winter/spring may be taken as the likely extent of the lagoon basin. Extent of water in late summer is likely to be less than the extent of the basin.</p>
		Water depth	Water depth: Average water depth within lagoon basin (metres) at low tide, measured at least once during the reporting cycle, measured at same time of year (preferably in late winter/early spring and late summer).	Average water depth should not deviate significantly from an established baseline subject to natural change (to be established for individual sites from previous surveys)	The influence of depth is a balance between sufficiently shallow to enable light penetration, and therefore photosynthesis, and sufficiently deep to submerge vegetation (and thereby affect oxygenation, food resource, habitat diversity and colonization by lagoonal fauna), determining temporal duration of stratification, and buffering against environmental change, particularly dehydration.
		Isolating barrier -	Length, width and height (relative to basin and to tidal	No change in measure from established baseline, subject to	The presence of an isolating barrier is fundamental to the structure and function of a saline lagoon (indeed the

		presence and nature	levels) of barrier. Presence of percolation flow at selected lagoons.	natural change. As a dynamic feature the shingle ridge will change naturally in all dimensions. However, there should be no decline in dimensions over the reporting cycle.	nature of the barrier and degree of separation from the sea defines the type of lagoon in the UK). The lagoons at this site are percolation lagoons formed either as natural depressions behind a shingle ridge or by artificial isolation of saltmarsh creeks. The shingle ridge is currently sufficiently high to prevent inundation by sea water except during storm tides. However, natural changes to the ridge and increases in sea levels may make inundation a more frequent occurrence. Survey above and beyond established monitoring programme may be required following exceptional weather events.
		Salinity regime	Seasonal averages (%) to be measured at least once during the reporting cycle (preferably in late winter/early spring and later summer to indicate seasonal low and high)	Average seasonal salinity, and seasonal maxima and minima, should not deviate significantly from an established baseline subject to natural change.	Salinity is critical to both the structure and function of a lagoon, e.g. in defining the habitat, contributing to diversity within a site, and determining what species are present. The evolution of a specialist lagoonal community appears to be related to intrinsic variation in salinity both in time (short-term - tidal, seasonal) and space. The long-term natural trend at some percolation lagoons is to become freshwater as a result of siltation within the lagoon preventing percolation. However, overtopping of the shingle ridge may cause the Blakeney Spit lagoons to exhibit high to hypersaline salinity levels in the period subsequent to overtopping. It is essential that salinity is measured at a similar time of the year and state of tide on a site. Salinity of the adjacent open coastal waters should be measured at the same time. See Bamber (1997) for anticipated range for individual lagoons.
		Species composition	Presence and abundance of composite species, measured at least once during the reporting cycle, measured at same time of year.	Presence and abundance of composite species should not deviate significantly from the established baseline, subject to natural change. Loss or decline of characteristic species, in particular, should trigger a management response.	Composite species are important contributors to the structure of the saline lagoon habitat. The community will reflect to varying degrees the structure and function of the habitat as a whole. Baseline survey provides a species checklist for the whole site which includes the following characteristic species, i.e. specially adapted or restricted to saline lagoons: <i>Idotea chelipes</i> , <i>Hydrobia ventrosa</i> , <i>Hydrobia neglecta</i> , <i>Palaemonetes varians</i> , <i>Cerastoderma glaucum</i> , <i>Nematostella vectensis</i> , <i>Gammarus insensibilis</i> ,

					<p><i>Paramysis nouveli</i>, <i>Littorina saxatilis</i> agg. and <i>Ruppia</i> spp. See Bamber (1997) for which particular components of the biota to focus on at each lagoon.</p> <p>Where infauna are monitored associated monitoring of the sediment should be undertaken.</p>
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Favourable Condition Tables for marine features

Interest feature	Sub-feature	Attribute	Measure	Target	Comments
Intertidal mudflats and sandflats		Extent	Area (ha) measured once during the reporting cycle.	No decrease in extent of intertidal mud and sandflats from an established baseline, subject to natural change.	Extent is an attribute on which reporting is required by the Habitats Directive. Loss of intertidal mud communities is likely to be detrimental to the structure of the feature, e.g. associated with a change in sediment budget or geomorphological regime, and may indicate long term changes in the physical conditions of the feature.
		Sediment character	1. Particle size analysis (PSA). Parameters include percentage sand/silt/gravel, mean and median grain size, and sorting coefficient, used to characterise sediment type. Measured in summer once during reporting cycle.	Average PSA parameters should not deviate significantly from the baseline, subject to natural change.	Sediment character defined by particle size analysis is key to the structure of the feature, and reflects all of the physical processes acting on it. Particle size composition varies across the feature and can be used to indicate spatial distribution of sediment types thus reflecting the stability of the feature and the processes supporting it.
Intertidal mudflats and sandflats		Sediment character (cont'd)	2. Sediment penetrability - degree of sinking.	Average measure should not deviate significantly from an established baseline, subject to natural change.	Penetrability is an indicator of sediment stability, degree of compaction indicates the shear strength of the sediment and thus the susceptibility of that sediment type to erosion. Compaction of the sediment influences the biological community within the sediment. Penetrability of sediments is determined by a combination of grain size and water content, which may provide a surrogate index of the penetrability of the sediments.
			3. Organic content % organic carbon from sediment sample measured periodically (frequency to be determined).	Average organic carbon content should not deviate significantly from an established baseline, subject to natural change.	Organic content critically influences the infaunal community and can cause deoxygenation of the feature which can be detrimental to the biota. However, a balance needs to be struck as organic content provides a measure of the material available to detritivores. A reduction in organic content could lead to a reduction in detritivores, with subsequent knock-on effects through the food chain.
			4. Oxidation - reduction	Average black layer depth	Degree of oxidation / reduction, reflecting oxygen

			potential. Depth of black anoxic layer. Measured periodically (frequency to be determined).	should not deviate significantly from an established baseline, subject to natural change.	availability within the sediment, critically influences the infaunal community and the mobility of chemical compounds. It is an indicator of the structure of the feature.
		Topography	Tidal elevation and shore slope, measured periodically (frequency to be determined).	Shore profile measurements should not deviate significantly from an established baseline, subject to natural change.	In the intertidal, topography reflects the energy conditions and stability of the sediment, which is key to the structure of the feature. Topography is a major influence on the distribution of communities throughout the feature. Measuring topography may also indicate the position of channels through the feature, which is another important indicator of the processes influencing the feature.
Intertidal mudflats and sandflats		Nutrient enrichment - macroalgal mats	Extent and seasonal abundance of macroalgal mats, measured periodically (frequency to be determined).	Average extent of macroalgae mats should not increase from an established baseline, subject to natural change.	Nutrient status is a key functional factor that influences biota associated with sediments including infauna as well as plants/algae at the surface. Green algae provide an indication of elevated nutrient levels since they respond by increasing extent or abundance. Further, mats of green algae, where they increase, both directly and indirectly affect sediment structure and function, primarily through smothering and associated deoxygenation.
	Sand and gravel communities	Distribution and extent of characteristic biotopes (listed in Appendix II)	Distribution and extent of characteristic biotopes, measured in the autumn, once during the reporting cycle.	Distribution and extent of characteristic biotopes should not deviate significantly from an established baseline, subject to natural change.	The distribution of the biotopes listed under this sub-feature in Appendix II is an important structural aspect of the site. Changes in extent and distribution may indicate long term changes in the physical conditions at the site.
		Characterising species - mussels <i>Mytilus edulis</i>	Abundance and age/size class profile of mussels. Measured periodically, frequency to be determined.	Abundance and age/size class profile of mussels should not deviate significantly from an established baseline, subject to natural change.	Mussels are a key structuring component of the intertidal sand and gravel communities and they play an important role in the functioning of the Wash ecosystem. A range of age classes is an important indicator of mussel recruitment and growth, which supports birds and other wildlife which feed selectively on different sizes of mussels.
	Muddy sand communities	Distribution and extent of characteristic biotopes (listed in Appendix II)	Distribution and extent of characteristic biotopes, measured in the autumn, once during the reporting cycle.	Distribution and extent of characteristic biotopes should not deviate significantly from an established baseline, subject to natural change.	The distribution of the biotopes listed under this sub-feature in Appendix II is an important structural aspect of the site. Changes in extent and distribution may indicate long term changes in the physical conditions at the site.
Intertidal mudflats and sandflats	Muddy sand communities	Species composition of	Presence and abundance of composite species measured in the autumn, once during the	Presence and abundance of composite species should not deviate significantly from an	Species composition is an important contributor to the structure of the biotopes within the sub-feature. The presence and relative abundance of characterising species

		characteristic biotopes LMS.PCer; LMS.MacAre	reporting cycle.	established baseline, subject to natural change.	gives an indication of the quality of the biotopes and change in composition may indicate cyclic change / trends in the intertidal sediment communities.
		Extent of <i>Zostera</i> beds	Extent (m ²) of the <i>Zostera</i> beds measured during the peak growth period (May - -Aug) every three years during the reporting cycle.	No decrease in extent from an established baseline, subject to natural change.	The extent of the <i>Zostera</i> (eelgrass) beds is a key structural component of the sediments and provides a long term integrated measure of environmental conditions across the feature, and is also particularly important in being an internationally scarce and declining habitat. The eelgrass beds provide a rich food source for wintering waterfowl and provide important nursery and feeding areas for fish.
	Mud communities	Distribution and extent of characteristic biotopes (listed in Appendix II)	Distribution and extent of characteristic biotopes, measured in the autumn, once during the reporting cycle.	Distribution and extent of characteristic biotopes should not deviate significantly from an established baseline, subject to natural change.	The distribution of the biotopes listed under this sub-feature in Appendix II is an important structural aspect of the site. Changes in extent and distribution may indicate long term changes in the physical conditions at the site.
<i>Salicornia</i> and other annuals colonising mud and sand		Extent	Area (hectares) measured once during the reporting cycle.	No decrease in extent from an established baseline subject to natural change. No increase at the expense of low- mid-saltmarsh communities.	Subject to periodic and seasonal variation- may need to be assessed over a period of time.
<i>Salicornia</i> and other annuals colonising mud and sand		Topography	Surface elevation of saltmarsh and foreshore measured periodically (frequency to be determined).	No change in surface elevation of saltmarsh sediments and foreshore, subject to natural change.	Topography is an important physical factor which influences colonisation of mud and sand by saltmarsh plants - this will only occur if adequate sediment is accreting - this is influenced by extent of fronting mudflat which can dissipate wave energy and affect availability of suspended sediment. Sediment is deposited on the saltmarsh surface with each tide, with transport along creeks an important element of this, allowing the surface to build.
		Creek patterns	Creek density and morphology measured periodically during reporting cycle (frequency to be determined).	No alteration of creek patterns from an established baseline, subject to natural change.	Creeks absorb tidal energy and assist with the delivery of sediment into saltmarshes. The efficiency of this process depends on creek pattern. Creek density is influenced by vegetation cover, suspended sediment load and tidal influence. Creeks allow pioneer vegetation to be established along their banks higher into the saltmarsh system. Headward lengthening and deepening of creeks can indicate changes are occurring in the saltmarsh system.

		Nutrient enrichment - algal mat cover	Area and thickness of algal mat, measured during summer periodically (frequency to be determined).	Area and thickness of algal mats should not deviate significantly from an established baseline, subject to natural change.	Algal mats are often associated with the pioneer saltmarsh communities, and are important primary producers, but can be affected by changes to water quality - eutrophication may lead to expansion and smothering of vegetation, or pollution can cause a decline which can lead to destabilisation of sediment surfaces and initiate erosion. An increase in algal cover can also indicate a decline in grazing invertebrates.
Salicornia and other annuals colonising mud and sand		Characteristic communities (listed in appendices IV & V)	Presence and abundance of characteristic communities or sub-communities measured periodically (frequency to be determined)	Presence and abundance of characteristic communities should not deviate significantly from an established baseline, subject to natural change.	These communities are important precursors to more stable vegetation of low to mid marsh. Communities may be dynamic in their distribution and are linked with the physical processes operating on the site e.g., topography., creek patterns, sea-level rise etc.
		Species composition of characteristic communities (listed in Appendices IV & V)	Frequency and abundance of constant species, measured periodically (frequency to be determined)	Frequency and abundance of constant species should not deviate significantly from an established baseline subject to natural change.	
Atlantic Salt Meadows		Extent	Area (hectares) measured once during reporting cycle	No decrease in extent of saltmarsh plant communities from the established baseline subject to natural change.	Monitoring will need to take account of the dynamic nature of some of these habitats. Coastal squeeze may result in replacement of Atlantic salt meadows by pioneer saltmarsh. A reduction in extent could be further indicated by ground survey to assess for signs of erosion such as toppled vegetated blocks; cliffing; stepping of saltmarsh edge; signs of roots in intertidal mud; signs of stress/damage to plants. Extent needs to be measured at low tide.
		Creek patterns	Creek density and morphology measured periodically (frequency to be determined)	No significant alteration of creek patterns from an established baseline, subject to natural change.	Creeks absorb tidal energy and assist with the delivery of sediment into saltmarshes. The efficiency of this process depends on creek pattern. Creek density is influenced by vegetation cover, suspended sediment load and tidal influence. Creeks allow pioneer vegetation to be established along their banks higher into the saltmarsh system
Atlantic Salt Meadows		Range of NVC saltmarsh communities	Presence and abundance of characteristic communities or sub-communities and transitions	No decrease in extent of saltmarsh plant communities from an established baseline,	A range of community types from low, mid, to upper saltmarsh should be present.

			to other habitats measured periodically (frequency to be determined)	subject to natural change.	
		Species composition of characteristic communities (listed in appendix V)	Frequency and abundance of constant species of characteristic communities measured periodically (frequency to be determined)	Frequency and abundance of constant species should not deviate significantly from an established baseline, subject to natural change.	The baseline will need to be established by habitat surveys using the National Vegetation Classification (NVC)
		Vegetation structure	Range and distribution of varying vegetation heights, measured periodically (frequency to be determined)	Vegetation structure should not deviate significantly from the established baseline, subject to natural change	Vegetation structure is largely affected by the impact of grazing (of wild or domestic herbivores) interacting with different vegetation communities.
	Low Marsh and Low-Mid Marsh communities	Species composition of characteristic communities or sub-communities (listed in appendices IV & V)	Frequency and abundance of constant species, measured once during the reporting cycle	Frequency and abundance of constant species should not deviate significantly from an established baseline, subject to natural change.	Low marsh and low-mid marsh communities can be relatively simple communities or more complex associations of species, and species composition will vary depending on geographical location and other physical factors.
Atlantic Salt Meadows	Mid and Mid-Upper marsh	Species composition of characteristic communities and sub-communities (listed in appendices IV & V)	Frequency and abundance of constant species of each community, measured once during the reporting cycle	Frequency and abundance of constant species should not deviate significantly from an established baseline, subject to natural change.	Mid-marsh and mid-upper marsh communities are generally more complex than those of the lower marsh.
	Upper Marsh	Species composition of characteristic communities and sub-communities	Frequency and abundance of constant species, measured once during the reporting cycle	Frequency and abundance of constant species should not deviate significantly from an established baseline, subject to natural change	Upper marsh communities experience less frequent tidal inundation and contain a broader range of species than lower marsh communities.

		(listed in appendices IV & V)			
	Transitional communities	Range of transitional communities from saltmeadow to other communities	Extent of transitional communities measured once during the reporting cycle	No decrease in extent of transitional communities from an established baseline, subject to natural change.	Sites with a complete sequence of habitats from saltmeadow to coastal, terrestrial or freshwater/brackish habitats are the most valuable for nature conservation. Such habitats can include sand dunes, shingle, reedbeds, and woodland.
Mediterranean and thermo-Atlantic halophilus scrubs		Extent	Length/area of scrub along drift line measured once during the reporting cycle.	No decrease in linear extent/area from established baseline, subject to natural change	Community is generally rather open. Characteristic of interfaces between saltmarsh and other coastal and transitional habitats. Tidal inundation infrequent
		Absence of landward constraints	Percent of linear extent not immediately constrained by artificial structures, measured periodically (frequency to be determined).	No increase in linear extent constrained by artificial structures from established baseline.	Sea level rise may squeeze the habitat against sea walls. The extent of this habitat which can migrate inland as sea levels rise are likely to be especially valuable
		Range of NVC saltmarsh communities (listed in appendices IV & V)	Frequency and abundance of constant species for each community or sub-community measured periodically (frequency to be determined).	Frequency and abundance of constant species should not deviate significantly from an established baseline, subject to natural change.	This community is often associated with the upper saltmarsh community. It is limited in its distribution to south-east England and is unlikely to be found outside existing SACs.
Common seals		Disturbance	Reduction or displacement of common seals measured using average count information measured periodically (frequency to be determined).	No significant reduction in numbers or displacement of common seals from an established baseline, subject to natural change.	Excessive disturbance can result in injury to pups, increased risk of infection (Drescher, 1978, cited in Bonner 1989) and/or increased energy expenditure.
	Intertidal mudflats and sandflats	Extent	Area (ha). Measured once during reporting cycle.	No decrease in extent of intertidal mudflats and sandflats from an established baseline, subject to natural change.	Important moulting, haul-out and breeding sites.

Favourable condition for otter

Operational feature	Criteria feature	Attribute	Measure	Target	Comments
Coast	Otter	Water quality	EA scale	“Good” with no pollution incidents	Refer to Environment Agency for data
		Site integrity	Total area	No reduction or fragmentation of the area.	
		Fish stocks	EA assessment	No significant decline in fish biomass or species diversity.	Refer to Environment Agency & Eastern Sea Fisheries for sample data.
		Disturbance	Extent of public access to the coast.	No significant change in usage; no significant development.	
		Bankside cover	Proportion of tidal & freshwater reedbed and cover in ditches	No overall permanent decrease	Some change acceptable as long as it is appropriately mitigated.
		Presence of otters	Signs of otters	Signs of otters found at least once per year	Use data from national or county surveys also warden reports.

Favourable Condition Table for Petalwort

Favourable condition: Most typical of open, rabbit grazed, winter-flooded dune slacks, but also occurs around ponds in sand dunes along compacted tracks in dunes and more rarely on metalliferous mine spoil associated with sand dunes. In the SSSI only known in one winter-wet dune slack.

Condition: If one attribute fails the site is not in favourable condition.

Time of visit: Between October and April, avoid dry weather or when slacks flooded.

Operational feature	Criteria feature	Attribute	Measure	Target	Comments
Sand dunes (slacks)	Petalwort	Quantity	Visual assessment	Estimate numbers (range eg 1-10: 10 - 50 etc) and general extent of area	No need to attempt precise account. It requires monitoring over a number of years to obtain an accurate picture of its abundance on a site.
		Sward height	Visual assessment	<1cm with much bare ground to 1 - 2 cm	Associates: <i>Agrostis stolonifera</i> , <i>Festuca rubra</i> , <i>Plantago coronopus</i> , <i>Bellis perennis</i> & other bryophytes eg <i>Didymodon</i> spp & <i>Barbula</i> spp. Presence of patches of bare or nearly bare sand important
		Shade	Visual assessment	Does not tolerate shading	
		Vegetation	Visual assessment	Does not tolerate competing vegetation eg <i>Salix repens</i>	

Note: The flooding of sites in winter, trampling of tracks, serves to maintain open scrub-free conditions. Rabbit grazing augments this. Sheep have been trialed at Branton Burrows but are no longer used. Seem to tolerate dry periods by virtue of underground tubers packed with lipids. And this may account for why it is often found in slightly drier niches than the rare sand dune *Bryums*. The plant probably benefits from slight disturbance. In UK genetic variation is apparently very low.

Favourable condition for SPA

Operational feature	Criteria Feature	Attribute	Measure	Target	Comments
All Habitats: Coastal waters, Sand and shingle, Intertidal mud and sand, Intertidal mud and sand with <i>Zostera</i> , Saltmarsh, Standing water Swamp, marginal and inundation, Marshy grassland	Annex 1 and migratory species of European importance and Waterfowl assemblage >20,000.	Disturbance and predation.	Reduction in numbers, reduction in productivity of breeding terns or displacement of birds. Measured periodically (frequency to be determined).	No significant reduction in numbers or productivity attributable to human disturbance or predation from an established baseline, subject to natural change.	All qualifying species The breeding success of Little terns is particularly vulnerable to disturbance and predation. Productivity (number of successfully fledged young) can also be used to monitor disturbance. Baseline to be determined.
		Extent and distribution of habitat	Area (ha.) measured once during reporting cycle.	No decrease in extent from an established baseline, subject to natural change.	Habitat for all qualifying species Baseline to be determined. Methodology for assessing target to be determined.
Coastal waters	Annex 1 species of European importance.	Food availability	Presence and abundance of fish, crustaceans, molluscs and worms. Measured periodically (frequency to be determined).	Presence and abundance of prey should not deviate significantly from an established baseline, subject to natural change.	Availability of prey species, especially sandeel and sprats in the size range 5-13cm. is important to Little, Common and Sandwich terns during the breeding period (April - August). Baseline to be determined. Methodology for assessing target to be determined.
Sand and shingle	Annex 1 species of European importance.	Vegetation cover/density	Mix of open ground with sparse vegetation and bare surfaces. Measured periodically (frequency to be determined).	Mix of open ground with sparse vegetation and bare surfaces should not deviate significantly from an established baseline, subject to natural change.	Breeding Little, Common and Sandwich Terns require open, largely bare areas of sand and shingle as nesting habitat. Vegetation cover should be <10% with unrestricted views. Baseline to be determined. Methodology for assessing target to be determined.

Intertidal mud and sand	Migratory species of European importance and Waterfowl assemblage >20,000.	Food availability	Presence and abundance of marine molluscs, crustaceans, fish and worms. Measured periodically (frequency to be determined).	Presence and abundance of prey species should not deviate significantly from an established baseline, subject to natural change.	Important prey species include: Macoma, Mytilus/Cerastoderma spat for Knot. Hydrobia for Pintail. Nereis, Corophium and Hydrobia are important for Shelduck. Nereis, Arenicola and Notomastus for Grey Plover. Gammarus for ringed plover. Hydrobia, Macoma, Corophium and Nereis are important for Redshank. Nereis, Lanice, Hydrobia, Cardium, Crangon, Carcinus, Corophium and Gammarus are all important prey for Avocet, Knot, Shelduck, Pintail Oystercatcher, Ringed Plover, Grey Plover and Redshank. Baseline to be determined. Methodology for assessing target to be determined.
Intertidal mud and sand	Migratory species of European importance and Waterfowl assemblage >20,000.	Landscape	Unrestricted views over open terrain (anti-predator feeding and roosting). Measured periodically (frequency to be determined).	Viewlines should not deviate significantly from an established baseline, subject to natural change.	Roosting Brent and Pink-footed Geese require unrestricted views of >500m. Feeding and roosting waders generally require views of >200m. Baseline to be determined. Methodology for assessing target to be determined.
Intertidal mud and sand with <i>Zostera</i>	Migratory species of European importance and Waterfowl assemblage >20,000.	Food availability	Presence and abundance of eel grass and/or green algae. Measured periodically (frequency to be determined).	Presence and abundance of food species should not deviate significantly from an established baseline, subject to natural change.	<i>Zostera</i> and <i>Enteromorpha</i> are an important food source for Brent geese and wigeon. Baseline level to be determined. Methodology for assessing target to be determined.
Saltmarsh	Annex 1 species of European importance.	Food availability	Presence and abundance of live small-medium sized mammals and birds. Measured periodically (frequency to be determined).	Presence and abundance of prey species should not deviate significantly from an established baseline, subject to natural change.	Mammals eg. voles, rats and birds eg. Starling, Meadow Pipit, Skylark are important prey items for Marsh Harrier. Baseline level to be determined. Methodology for assessing target to be determined.
Saltmarsh	Migratory species of European	Landscape	Unrestricted views over open terrain (anti-predator	Viewlines should not deviate significantly from an established baseline, subject to natural change.	Brent Geese require unrestricted views of >500m Feeding and roosting waders generally require views of >200m.

	importance and Waterfowl assemblage >20,000.		feeding and roosting). Measured periodically (frequency to be determined).		Baseline to be determined. Methodology for assessing target to be determined.
Saltmarsh	Migratory species of European importance and Waterfowl assemblage >20,000.	Vegetation characteristics	Range of vegetation heights. Measured periodically (frequency to be determined).	Range of vegetation heights should not deviate significantly from an established baseline, subject to natural change.	Roosting waders generally require vegetation og <10cm. Feeding Brent Geese require vegetation of 10-20 cm. Baseline to be determined. Methodology for assessing target to be determined.
Saltmarsh	Migratory species of European importance and Waterfowl assemblage >20,000.	Food availability	Presence and abundance of soft-leaved seed-bearing plants. Measured periodically (frequency to be determined).	Presence and abundance of food species should not deviate significantly from an established baseline, subject to natural change.	Spergularia, Puccinellia, Triglochin, Aster, Plantago and Salicornia are important food plants, particularly for Brent Geese and wigeon. Also Puccinellia maritima, Hordeum marinum, Lolium perenne, Festuca rubra, Alopecurus bulbosus for White-fronted goose. Baseline to be determined. Methodology for assessing target to be determined.
Saltmarsh	Migratory species of European importance and Waterfowl assemblage >20,000.	Food availability	Presence and abundance of invertebrates. Measured periodically (frequency to be determined).	Presence and abundance of prey species should not deviate significantly from an established baseline, subject to natural change.	Invertebrate prey species eg. Hydrobia are important for waders. Baseline to be determined. Methodology for assessing target to be determined.
Standing water	Annex 1 species of European importance.	Landform	Ditches with shallow margins and not too deep (feeding). Measured periodically (frequency to be determined).	Ditch profiles should not deviate significantly from a reference level.	Bitterns require that at least 75% of ditches should be up to 2.5m. deep consisting of a deep central channel (>1.5m.)and a 1m.deep/5m.wide shallow margin on at least one side. Reference level to be determined. Methodology for assessing target to be determined.
Standing water	Annex 1 species of European importance.	Water area	Large open areas of water (feeding), measured periodically	No significant reduction in the area of open water for feeding during the winter season, from a reference level.	One or more freshwater pools of >0.5ha, not exceeding 20% of reedbed area overall. Reference level to be determined. Methodology for

			(frequency to be determined).		assessing target to be determined.
Standing water	Migratory species of European importance and Waterfowl assemblage >20,000.	Connectivity	Areas of standing water should be very close to feeding pastures (roosting, anti-predator). Measured periodically (frequency to be determined).	Proximity of areas of standing water to feeding pastures should not deviate significantly from a reference level.	For roosting and for escape when disturbed/threatened, it is important for Wigeon that areas of standing water are very close to feeding pastures. Reference level to be determined. Methodology for assessing target to be determined.
Standing water	Migratory species of European importance and Waterfowl assemblage >20,000.	Water depth	Extensive shallow water (feeding). Measured periodically (frequency to be determined).	Extent of shallow water should not deviate significantly from a reference level.	Pintail require a water depth of <30cm Reference level to be determined. Methodology for assessing target to be determined.
Standing water	Migratory species of European importance and Waterfowl assemblage >20,000.	Food availability	Presence and abundance of soft-leaved and aquatic plants. Measured periodically (frequency to be determined).	Presence and abundance of food species should not deviate significantly from a reference level.	Potamogeton, Eleoidea, Rumex, Glyceria and Chara are important for pintail. Reference level to be determined. Methodology for assessing target to be determined.
Standing water Marshy grassland (Coastal lagoons, pools or freshwater marsh)	Annex 1 species of European importance.	Landform	Shallow-sloping ground adjacent to water (colonial nesting). Measured periodically (frequency to be determined).	No significant reduction in the area Shallow-sloping ground adjacent to water (colonial nesting), from a reference level.	Avocets require sloping land, grading to <30cm above water level, including islands, spits or platforms. Reference level to be determined. Methodology for assessing target to be determined.
Standing water Marshy grassland (Coastal lagoons, pools or freshwater marsh)	Annex 1 species of European importance.	Vegetation characteristics	Frequent patches of sparsely vegetated or bare ground (nesting). Measured periodically (frequency to be determined).	No significant reduction in extent of sparsely vegetated or bare ground, from a reference level.	Vegetation of <10% required by breeding avocets, up to 30-40% where there are many predators. Reference level to be determined. Methodology for assessing target to be determined.

Standing water (shallow lagoons for breeding avocet)	Annex 1 species of European importance.	Water depth	Extensive shallow water (feeding). Measured periodically (frequency to be determined).	No significant reduction in extent of shallow water, from a reference level.	Avocet require a water depth of 3-5cm Reference level to be determined. Methodology for assessing target to be determined.
Standing water (shallow lagoons for breeding avocet)	Annex 1 species of European importance.	Hydrology flow	Stable water levels (nesting). Measured periodically (frequency to be determined).	Little or no fluctuation in water levels in nesting areas.	Ideally less than 2cm water level fluctuation in nesting areas. Methodology for assessing target to be determined.
Swamp, marginal and inundation	Annex 1 species of European importance.	Landscape	Large, unbroken expanse of emergent vegetation (feeding, concealment), measured periodically (frequency to be determined).	No significant reduction in expanse of emergent vegetation year round, from a reference level.	Bittern require and marsh harrier ideally require continuous reed over >20ha. Reference level to be determined. Methodology for assessing target to be determined.
Swamp, marginal and inundation	Annex 1 species of European importance.	Salinity	Freshwater (feeding). Measured periodically (frequency to be determined).	Water salinity should not deviate significantly from a reference level.	Bitterns require freshwater as feeding habitat. Salinity <5%. Breeding avocets require <25% salinity Reference level to be determined. Methodology for assessing target to be determined.
Swamp, marginal and inundation	Annex 1 species of European importance.	Water depth	Shallow water throughout reedbed with frequent deeper pools and dykes. Measured periodically (frequency to be determined).	Depth of water in reedbed and in pools and dykes should not deviate significantly from a reference level.	Bittern and Marsh Harrier require a water depth of 10-30cm. throughout reedbeds. Bitterns also require pools and dykes 2-4 m. deep. Reference level to be determined. Methodology for assessing target to be determined.
Swamp, marginal and inundation	Annex 1 species of European importance.	Vegetation characteristics	Pure reed stand with vigorous growth over whole area (nesting, concealment).	Age structure of reedbed should not deviate significantly from a reference level.	Bittern and Marsh Harrier require c30% of reedbed uncut and remainder not more than 6 years old with no more than 20% cut in any year. Reference level to be determined. Methodology for

			Measured periodically (frequency to be determined).		assessing target to be determined.
Swamp, marginal and inundation	Annex 1 species of European importance.	Food availability	Presence and abundance of fish and amphibians. Measured periodically (frequency to be determined).	Presence and abundance of fish and amphibians should not deviate significantly from a reference level.	Eels, roach of 6-35cm., rudd, frogs and toads are important prey items for Bittern. Reference level to be determined. Methodology for assessing target to be determined.
Swamp, marginal and inundation, Marshy grassland	Annex 1 species of European importance.	Food availability	Presence and abundance of live mammals and birds. Measured periodically (frequency to be determined).	Presence and abundance of prey species should not deviate significantly from a reference level.	Mammals eg. voles, mice, rabbit and a variety of bird species are important prey items for Marsh Harrier. Reference level to be determined. Methodology for assessing target to be determined.
Marshy grassland	Migratory species of European importance and Waterfowl assemblage >20,000.	Landscape	Unrestricted views over open terrain. Measured periodically (frequency to be determined).	Viewlines should not deviate significantly from a reference level.	Brent Geese, Pink-footed Geese, White-fronted Geese and Wigeon generally require views over >500m. Reference level to be determined. Methodology for assessing target to be determined.
Marshy grassland	Migratory species of European importance and Waterfowl assemblage >20,000.	Food availability	Presence and abundance of soft-leaved plants. Measured periodically (frequency to be determined).	Presence and abundance of food species should not deviate from a reference level.	Important food plants for Brent Goose, Pink-footed Goose, White-fronted Goose and Wigeon include Agrostis stolonifera, Lolium perenne, Glyceria spp., Trifolium repens, Poa spp., Holcus lanatus, Alopecurus spp. Eleocharis palustris for Pintail Reference level to be determined. Methodology for assessing target to be determined.
Marshy grassland	Migratory species of European importance and Waterfowl assemblage >20,000.	Food availability	Presence and abundance of soil invertebrates. Measured periodically (frequency to be determined).	Presence and abundance of prey species should not deviate from a reference level.	Important prey species for redshank include earthworms and leatherjackets. Reference level to be determined. Methodology for assessing target to be determined.

Marshy grassland	Assemblage including internationally important migratory species.	Vegetation characteristics	Predominantly short vegetation (feeding). Measured periodically (frequency to be determined).	Vegetation height should not deviate significantly from a reference level.	Brent Geese prefer swards of <10cm. in feeding areas. Pink-footed and White-fronted Geese prefer sward heights of 10-20 cm. Reference level to be determined. Methodology for assessing target to be determined.
Marshy grassland	Assemblage including internationally important migratory species.	Hydrology/flow	Wet fields with many surface pools, ditches or channels (feeding). Measured periodically (frequency to be determined).	No reduction in extent of shallow surface water, from a reference level.	Redshank require a water dept of 1-6cm throughout feeding areas. Reference level to be determined. Methodology for assessing target to be determined.



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cSAC: Minsmere to Walberswick Heaths and Marshes
SPA: Minsmere to Walberswick
SSSI : MINSMERE TO WALBERSWICK HEATH AND MARSHES

(The heathland and vegetated shingle habitats are separate from each other so that there is no direct interaction between them on this site and the objectives reflect this).

Conservation objective for the European Interest on the SSSI

The conservation objectives for the European interests on the SSSI are:

Subject to natural change, to maintain*, in favourable condition, the

- annual vegetation of drift lines and perennial vegetation of stony banks.

To maintain* in favourable condition, the

- dry heaths,

To maintain*, in favourable condition, the habitats for the population of Annex 1 species⁺ of European importance with particular reference to:

- swamp, marginal and inundation
- standing water
- grassland
- coastal lagoons
- marsh and heathland.

⁺ Avocet (*Recurvirostra avosetta*), Bittern (*Botaurus stellaris*), Marsh harrier (*Circus aeruginosus*), Nightjar (*Caprimulgus europaeus*), and Hen harrier (*Circus cyaneus*),

to maintain*, in favourable condition, the habitats for the population of Little tern (*Sterna albifrons*), with particular reference to

- shingle and shallow coastal waters.

To maintain*, in favourable condition, the habitats for the populations of the regularly occurring migratory bird species, Gadwell (*Anas strepera*), Teal (*Anas crecca*), Shoveler (*Anas clypeata*), European White-fronted goose (*Anser albifrons*), of European importance, with particular reference to

- Grassland
- marsh and standing water.

The Conservation Objectives for Minsmere to Walberswick Heaths and Marshes cSAC and Minsmere to Walberswick SPA are, in accordance with para C 10 of PPG 9, the reasons for which the SAC was classified/designated. The draft Conservation Objectives for the Minsmere Walberswick European marine site were published by English Nature in December 2000.

* maintenance implies restoration if the feature is not currently in favourable condition.

the reasons for which the SPA was classified/designated. The entry of 25 August 1998 on the Register of European Sites gives the reasons for which the SPA was classified.

Annex:
Favourable Condition Table.

FAVOURABLE CONDITION TABLE

The Favourable Condition Table will be used by English Nature and other relevant authorities to determine if a site is in favourable condition. Favourable condition is achieved when the targets given below are met.

The favourable condition table should inform the scope and nature of any ‘appropriate assessment’ under the Habitats Regulations, but an appropriate assessment will also require consideration of issues specific to the individual plan or project. The favourable condition table does not by itself provide a comprehensive basis on which to assess plans and projects as required under Regulations 20-21, 24, 48-50 and 54 - 85. The scope and content of an appropriate assessment will depend upon the location, size and significance of the proposed project. English Nature will advise on a case by case basis.

Following an appropriate assessment, competent authorities are required to ascertain the effect on the integrity of the site. The integrity of the site is defined in para C10 of PPG9 as the coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified. The determination of favourable condition is separate from the judgement of effect upon integrity. For example, there may be a time-lag between a plan or project being initiated and a consequent adverse effect upon integrity becoming manifest in the condition assessment. In such cases, a plan or project may have an adverse effect upon integrity even though the site remains in favourable condition.

Annual counts for qualifying bird species will be used by English Nature, in the context of five year peak means, together with available information on UK population and distribution trends, to assess whether the SPA is continuing to make an appropriate contribution to the Favourable Conservation Status of the species across Europe.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Vegetated shingle	Annual vegetation of drift lines and perennial vegetation of stony banks	Coastal Processes	Number and location of coastal defence operations within sediment cell influencing coastal processes. Measured once per reporting cycle.	Maintain sediment supply to and within the site through naturally operating coastal processes to allow a balance of accretion and erosion. A net balanced sediment budget should prevail, subject to natural variation.	<p>Sediment budget within the site is, in part, influenced by sediment supply into the site from long shore drift within the sediment cell, which also forms a significant part of natural sediment recycling within the site. If coastal processes are operating freely there should be a balance of erosion and accretion which will help to maintain the shingle structures which support the annual vegetation of drift lines interest feature.</p> <p>Information on coastal defense operations should be available from SMPs.</p>
	Annual vegetation of drift lines	Mobility	Percentage of extent of substrate suitable for colonisation by annual vegetation of drift lines not immediately constrained by introduced structures, landforms or operations measured once per reporting cycle.	No increase in linear extent constrained by introduced structures, landforms or operations.	An important aspect of this habitat is its ability to modify its distribution in response to natural dynamic coastal processes. Physical constraints or operations such as shingle recycling can reduce the extent and quality of this community and affect the overall structure of the drift line communities.
Vegetated shingle	Annual vegetation of drift lines	Substrate composition	Presence of shingle and fine matrix in combination with surface or buried organic material.	Maintain substrate composition through natural processes with sufficiently low levels of human-induced disturbance to allow drift line vegetation to complete its vegetation cycle. As an indicative target, drift	The combination of inorganic and organic substrate is an important precursor to development of annual vegetation of drift lines. Substrate supply should be regulated by natural coastal processes. Drift line organic materials (tidal-derived

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
				line organic materials should be present along at least 10% of length surveyed, with artificial (non-organic) debris not at levels restricting or suppressing vegetation establishment and growth. Targets appropriate to site should not deviate significantly from an established baseline ¹ , subject to natural change.	seaweed, driftwood etc.) on the surface of and in combination with the shingle matrix are important sources of nutrients and anchoring points essential for vegetation development and survival and may play a part in maintaining a seed bank.
Vegetated shingle	Annual vegetation of drift lines	Characteristic species of annual vegetation of drift lines	Presence of characterising species, particularly <i>Lathyrus japonicus</i> , <i>Crambe maritima</i> , and including <i>Beta vulgaris</i> ssp <i>maritima</i> , <i>Honckenya peploides</i> , and <i>Glaucum flavum</i> spp. Assessments will need to be made during late summer (July/September), at least once every reporting cycle.	Maintain the presence and broad distribution of stands of <i>Cakile maritima</i> (sea rocket), <i>Lathyrus japonicus</i> (sea pea), <i>Crambe maritima</i> (Sea Kale), <i>Glaucum flavum</i> (Yellow horned poppy) and other local variants of drift line vegetation across the feature, allowing for natural variation. As these communities can be very variable, baselines will need to be established during first reporting cycle but should not be lower than 10% of the area that could be colonised. Targets appropriate to site should not deviate significantly from an established baseline ¹ , subject to natural change.	These communities are found in a narrow strip at the extreme high water mark. Changes in the frequency and abundance of these species should be expected to occur seasonally as a result of natural disturbance by storm events, but the communities are sensitive to disturbance by human activities. Some Annual vegetation of drift lines on coarse substrates does not fit well into the NVC classification but are nevertheless an important part of the regional variation. Primarily annuals but perennials may occur in more areas with greater stability.
	Perennial vegetation of stony banks	Extent	Area (ha) of perennial vegetation of stony banks, and the area of geomorphological structures supporting them	No decrease in linear extent or area from reference level, to be established during first reporting cycle. Extent must take account of natural	This attribute is dependent on there being adequate area to support the whole range of vegetation communities which have been previously recorded on the site.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
			measured once per reporting cycle.	variation of this habitat as a result of dynamic coastal processes.	Extent of the shingle feature will influence vegetation succession.
Vegetated shingle	Perennial vegetation of stony banks	Mobility	Percentage of linear extent and area of the active zone of shingle feature suitable for colonisation by perennial vegetation of stony bank, not immediately constrained by introduced structures or landforms, measured once per reporting cycle.	No increase in linear extent or area constrained by introduced structures or landforms.	An important aspect of this habitat in the early stages of the succession near the coast, is its ability to modify its distribution in response to natural dynamic coastal processes. Introduction of physical constraints would reduce the extent of this community and affect the vegetation pattern. On more established stable parts of shingle structures, mobility is a less significant attribute.
		Substrate composition	Presence of sand/shingle in combination with surface or buried organic material.	Maintain proportion of shingle/sand/organic matter, regulated entirely by natural processes.	The combination of inorganic and organic substrate, derived from natural processes, is an important factor in allowing the establishment and development of this type of vegetation. The presence of a fine matrix influences the water balance of the surface layers and is important for plant colonisation.
		Lack of disturbance	Proportion of substrate not showing evidence of human disturbance. This can include evidence of path network proliferation, especially from access points/car parks/throughway; detached clumps of vegetation and broken surface layers; disturbance of bare shingle;	Maintain substrate with sufficiently low levels of human-induced disturbance to allow perennial vegetation to establish and undergo succession.	Most sites are likely to have experienced some degree of past disturbance. If this has stopped, recovery of vegetation may be possible, but very slow, if the fine matrix can reestablish. If disturbance is continuous, recovery is unlikely to occur. Infrequent moderate disturbance may, in certain circumstances, initiate successional phases and can lead to

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
			loss of sorting and relief of ridge system.		the development of modified grassland communities
Vegetated shingle	Perennial vegetation of stony banks	Characteristic species of perennial vegetation of stony banks.	Presence of vegetation communities characteristic of perennial vegetation of stony banks. Vegetation communities are likely to consist of one or more of the following (characterising species in brackets): (<i>Lathyrus japonicus</i> , <i>Crambe maritima</i> , <i>Glaucium flavum</i> and <i>Rumex crispus</i>); lichen/moss communities with less than 30% grasses (including epiphytic species) (<i>Pseudoscleropodium purum</i> , <i>Dicranum scoparium</i> , <i>Cladonia</i> spp.); grassland (<i>Festuca rubra</i> , <i>Lotus corniculatus</i> , <i>Arrhenatherum elatius</i>); heath (<i>Pteridium aquilinum</i> , <i>Calluna vulgaris</i> , <i>Erica cinerea</i>); wetland (<i>Phragmites australis</i> , <i>Iris pseudacorus</i> , <i>Epilobium palustre</i>); scrub (<i>Ulex europaeus</i> , <i>Prunus spinosa</i> , <i>Rubus fruticosus</i>).	Maintain range of specialist vegetation and its zonation previously recorded on the site, taking account of natural variation. One or more of the characterising species should be at least frequent for each of the communities present on a site.	Individual sites will exhibit different patterns and range of vegetation types depending on site size, history, substrate and patterns of human use. Previous surveys should be used to establish the range for each site. The range of NVC-equivalent communities for this type of vegetation covers heaths, grasslands, (acid and mesotrophic), sand dunes, scrub, maritime cliff and saltmarsh and mires. Some communities are present as part of a succession following previous disturbance.
Vegetated shingle	Perennial vegetation of stony banks	Vegetation negative indicators	Presence of negative indicator species including non-native species, invasive species indicative of	No further increase in species not typically associated with the communities that define the feature. Local targets will need	Changes in the extent and cover of invasive species usually indicate a change in conditions on a site, often as a result of anthropogenic

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
			changes in nutrient status and species not characteristic of typical communities.	to be defined and cross-reference to negative indicators for grassland features.	activities which may promote rapid expansion or increase in cover. These are often initiated by changes in management. Such species may include those identified as negative indicators for grasslands <i>e.g.</i> <i>Cirsium arvense</i> , <i>Senecio jacobaea</i> , <i>Urtica dioica</i> , together with non-native species and scrub/trees. These will vary from site to site and locally-significant species will need to be defined.
		Vegetation patterning	Presence of vegetation patterns related to geomorphological structure (ridges and lows).	No reduction in extent of vegetation cover exhibiting relationship to geomorphological structure, taking account of natural variation.	Vegetation patterns can be related to the physical characteristics of the substrate. Patterns of ridges and lows in particular reflect the variations in particle size which in turn affect water-holding capacity.
Vegetated shingle	Perennial vegetation of stony banks	Hydrological conditions	Impact of changes to hydrological conditions on extent and composition of wetland vegetation communities where they have been previously recorded. Wetland communities may not be present on all sites.	Maintain hydrological conditions that will sustain specialist freshwater wetland vegetation communities, subject to natural variation.	The water table can be adversely affected by water abstraction, whilst disturbance of the surface layers can affect the water-holding capacity of the surface layers (see substrate attribute). If wetland communities, where present, exhibit signs of reduction in freshwater supply, (long-term replacement of wetland species by scrub or dry grassland species or species of brackish conditions), that cannot be attributed to natural variation, further detailed studies of hydrological conditions may be needed. Where water abstraction is already occurring, there should be monitoring programmes that can

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
					supply more information.
Heathland	H1, dry heathland	Extent	Total area (ha) mapped in relation to baseline (ie first available map of interest feature when/after notified). Measure every two years if possible.	Maintain existing area on its current sites.	This community is confined to base-poor and oligotrophic sandy soils in the more continental lowlands of Eastern England. Large areas have been lost or fragmented to agriculture and forestry in the past.
Heathland	H1, dry heathland	Bare ground	'Natural' bare ground (mineral soil) in intimate mosaic within vegetation 'Recreation' heavily used paralleling paths.	'Natural' between 10-25% 'Heavily disturbed' <1%	Bryophytes and lichens are more extensive and diverse among open covers of <i>Calluna</i> . Sandy profiles can be found in coastal and few inland dune systems, where there is, or has been, mobile sand.
		Vegetation Structure	Record percentage of cover of <i>Calluna vulgaris</i> in different stages of its life cycle.	Cover of <i>Calluna vulgaris</i> to be between 25% minimum and 90% maximum. Mosaic with >10% young and 30-50% mature / degenerate <i>Calluna vulgaris</i> within unit. < 25% <i>Ulex europaeus</i>	<i>Calluna vulgaris</i> is often the only woody species present. Its cover and height are very variable. Grasses, when they occur, are present as scattered tussocks. <i>Ulex europaeus</i> is uncommon and restricted to disturbed areas.
		Vegetation Composition	Record frequency of any of the following species when present: List A <i>Calluna vulgaris</i> List B <i>Agrostis capillaris</i> , <i>Festuca ovina</i> , <i>Deschampsia flexuosa</i>	All species from List A must be at least frequent. At least two species of list B are at least occasional.	Associated flora is for the most part confined to areas between <i>Calluna</i> clumps and the centre of collapsing bushes.
Heathland	H1, dry heathland	Negative	Record frequency and	< 50 % cover degenerate/dead	<i>Rhododendron ponticum</i> can spread

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		indicators	percentage cover of any of the following species when present: <i>Pteridium aquilinum</i> <i>Rhododendron ponticum</i> <i>Rubus</i> spp. <i>Senecio</i> spp. <i>Urtica dioica</i> <i>Pinus</i> spp. <i>Betula</i> spp. <i>Quercus</i> spp.	<i>Calluna vulgaris</i> No <i>Rhododendron ponticum</i> < 1 % <i>Rubus</i> spp., <i>Senecio</i> spp., <i>Urtica dioica</i> , creeping or spear thistle < 5% scrub, trees or tree seedlings. < 25% <i>Pteridium aquilinum</i>	rapidly and have a negligible nature conservation value. Dense rhododendron casts deep shade which excludes other vegetation. Scrub (shrubs, trees or tree seedlings) above 1 m in height is an important component of the heathland but its cover should be stable or not increasing as a whole. Management of bracken should be directed more to control than eradication.
			Record presence of signs of overgrazing, e.g. carpet, topiary or drumstick heather forms.	No presence of signs of overgrazing.	Although lowland heathlands tend to be more under-grazed than over-grazed, localized overgrazing may occur. Management may need to be modified to tackle these situations.
	H8, dry heathlands	Extent	Total area (ha) mapped in relation to baseline (ie first available map of interest feature when/after notified). Measure every two years if possible.	Maintain existing area on its current sites.	H8 occurs on free-draining, acid to circumneutral soils in the warm oceanic regions of lowland England.
		Bare ground	'Natural' bare ground (mineral soil) in intimate mosaic within vegetation. 'Heavily disturbed' stock poached, eroded or heavily used paralleling paths.	'Natural' between 10-25% in intimate mosaic with vegetation 'Disturbed' <1%	H8 appears in free draining soils. Typically high cover sub-shrub canopy, sometimes excluding all but very sparse herbaceous species.
Heathland	H8, dry heathlands	Vegetation Structure	Record cover of heather in different stages of its life cycle.	Cover of <i>Calluna vulgaris</i> to be between 25% minimum and 90% maximum.	Grazing and burning affect the structure and composition of shrub and grass components.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
				Mosaic with >10% young and 30-50% mature / degenerate <i>Calluna vulgaris</i> within unit.	In coastal stands, exposure to wind limits sub-shrub growth.
		Vegetation Composition	Record frequency of any of the following species when present: List A <i>Ulex gallii</i> , <i>Calluna vulgaris</i> and <i>Erica cinerea</i> List B <i>Potentilla erecta</i> , <i>Festuca ovina</i> , <i>Scilla verna</i> , <i>Hypochoeris radicata</i> and <i>Vaccinium myrtillus</i> , <i>Agrostis capillaris</i> , <i>Ulex europaeus</i> .	All species from List A must be at least frequent. At least one species of list B is at least occasional.	Burning opens the ground for <i>Ulex gallii</i> . <i>Ulex europaeus</i> appears in disturbed areas.
		Negative indicators	Record percentage cover of any of the following species when present: <i>Rubus</i> spp. <i>Pinus</i> spp. <i>Betula</i> spp. <i>Pteridium aquilinum</i>	< 50 % cover degenerate/dead <i>Calluna vulgaris</i> < 5% tree or tree seedlings. < 25% <i>Pteridium aquilinum</i>	Invasion of shrubs and trees is hindered by exposure to wind and salt-spray.
			Record presence of signs of overgrazing, e.g. carpet, topiary or drumstick heather forms.	No presence of signs of overgrazing.	Although lowland heathlands tend to be more under-grazed than over-grazed, localized overgrazing may occur. Management may need to be modified to tackle these situations.

¹Baseline to be established during first reporting cycle.

SPA features

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
All Habitats	Annex 1 and migratory populations of European Importance.	Disturbance	Bird numbers, productivity and displacement of birds, measured periodically (frequency to be determined).	No significant reduction in numbers or productivity and no significant displacement of birds attributable to disturbance, from a reference level ¹ . For shingle and saltmarsh habitat, this target is subject to natural change.	<p>Excessive disturbance can result in reduced food intake and/or increased energy expenditure.</p> <p>The breeding success of terns is particularly vulnerable to disturbance and predation. Productivity (number of successfully fledged young) can be used to monitor disturbance.</p> <p>Methodology for assessing target to be determined. Reference level to be determined.</p>
All Habitats	Annex 1 and migratory populations of European Importance.	Extent and distribution of habitat	Area (ha), measured once per reporting cycle.	No decrease from reference level ¹ . For shingle and saltmarsh habitat, this target is subject to natural change.	<p>For all habitats, for all qualifying species.</p> <p>Sand and shingle is the nesting area for little tern. Shallow coastal waters are an important feeding area for Little tern.</p> <p>Methodology for assessing target to be determined. Reference level to be determined.</p>
All habitats	Annex 1 populations of European Importance: Marsh harrier, Hen harrier and Bittern	Food availability	Abundance of small-medium sized mammals and birds, fish and amphibians, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of food species year round from a reference level.	<p>Small-medium sized mammals (voles, mice rabbits) and birds (pipits to ducks) are important prey in the breeding season for marsh harriers.</p> <p>Fish and amphibians are important prey year round for</p>

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
					<p>Bittern, including rudd, roach (6-35cm), frogs and toads.</p> <p>Reference level to be determined. Methodology to be determined.</p>
Shingle	Annex 1 populations of European Importance: Little tern	Vegetation cover/density.	Open, short vegetation and bare ground predominating in areas used by breeding Little terns, measured periodically (frequency to be determined).	Vegetation characteristics should not deviate significantly throughout the areas used for nesting, subject to natural change.	<p>Nesting Little terns require <10% vegetation cover and the remainder bare shingle, during the breeding season.</p> <p>Open area of largely bare shingle important in areas used by nesting Little terns. Open ground, with sparse vegetation allows unrestricted views (over minimum distance 200m), for early detection of predators.</p> <p>Methodology to be determined.</p>
Shallow coastal waters	Annex 1 populations of European Importance: Little tern	Food availability.	Presence and abundance of <i>Crustacea</i> , small fish and worms, measured periodically (frequency to be determined).	Presence and abundance of prey species should not deviate significantly from a reference level ¹ , subject to natural change.	<p>Crustaceans, annelids, sandeel, spats, <i>Clupeidae</i> are important feeding for Little terns.</p> <p>Reference level to be determined. Methodology to be determined.</p>
Swamp, marginal and inundation	Annex 1 populations of European Importance: Marsh harrier and Bittern	Landscape	Large, unbroken expanse of emergent vegetation (nesting, feeding, cover), measured periodically (frequency to be determined).	No significant reduction in expanse of emergent vegetation, year round.	<p>Bittern and Marsh Harrier require continuous reed over >20ha.</p> <p>Methodology to be determined.</p>
Swamp, marginal and inundation	Annex 1 populations of European Importance: Marsh harrier and Bittern	Vegetation characteristics	Pure reed stands with vigorous growth over whole area (nesting, concealment), measured periodically (frequency to be determined).	No significant reduction in extent of vigorous growth over the pure reed stand, maintained through cutting regime.	Bittern and Marsh harrier require at least 30% reedbed uncut, and remainder not more than 6 years old with not more than 20% cut in any one year.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
			determined).		Methodology to be determined.
Swamp, marginal and inundation	Annex 1 populations of European Importance: Bittern	Salinity	Salinity, measured periodically (frequency to be determined).	No significant change in wetland salinity during the breeding season.	Salinity of wetlands should not be greater than 5 % during the breeding season. Freshwater wetlands are important feeding grounds during breeding season. Methodology to be determined.
Standing water	Annex 1 populations of European Importance: Bittern	Landform	Ditches predominantly with shallow margins and not too deep (feeding), measured periodically, (frequency to be determined).	No significant reduction in ditches with shallow margins.	Most ditches up to 2.5m deep, consisting of deep central channel (>1.5m) and 1m deep/5m wide shallow margin on at least one side. Year round Methodology to be determined.
Standing water	Annex 1 populations of European Importance: Bittern and Marsh harrier	Water Depth	Shallow water within reeds, plus deep pools and dykes (feeding), measured periodically (frequency to be determined).	Water depth and extent of shallows within reeds should not deviate significantly from reference level, with no significant reduction in the presence of deep pools and channels year round.	Bittern and Marsh harrier require water depth throughout reedbed of 10-30cm, and Bittern also require pools of pools 2-4m deep. Channels for bittern should be up to 2.5m deep, consisting of a deep central channel (>1.5m) and 1m deep/5m wide shallow margin on at least one side. Bittern year round, Marsh Harrier breeding season. This applies to bittern and marsh harrier breeding areas only.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
					Methodology to be determined.
Standing water	Annex 1 populations of European Importance: Bittern	Water area	Large, open areas of water (feeding), measured periodically (frequency to be determined).	No significant reduction in the area of open water for feeding, year round.	<p>Bittern require one or more freshwater pools of >0.5 ha, open water not exceeding 20 % of the reedbed area present during summer months.</p> <p>Breeding season. Reedbed edge is an important feeding area for bitterns. This is mostly provided by dyke edges at this site.</p> <p>Methodology to be determined.</p>
Saltmarsh	Annex 1 populations of European Importance: Avocet	Vegetation characteristic	Open, short vegetation or bare ground predominating in areas used for roosting, measured periodically (frequency to be determined).	No significant reduction in extent of short vegetation or bare ground throughout areas used for feeding and roosting, subject to natural change.	<p>Vegetation height < 10cm is required throughout areas used for roosting by avocets.</p> <p>Methodology to be determined.</p>
Saltmarsh	Annex 1 populations of European Importance: Avocet	Landscape	Open areas, relatively free of obstructions (for feeding, anti-predator, roosting), measured periodically (frequency to be determined).	No significant reduction in view lines in feeding and roosting areas, subject to natural change.	<p>At roost sites, Avocets require areas with unrestricted views over >200m.</p> <p>Methodology to be determined.</p>
Saltmarsh	Annex 1 populations of European Importance: Avocet	Landform	Shallow-sloping ground adjacent to water (colonial nesting), measured periodically (frequency to be determined).	No significant reduction in sloping ground adjacent to water, from reference level, subject to natural change.	<p>At nesting areas during the breeding season (summer), avocets require sloping land, grading to <30cm above water level, including islands, spits or platforms.</p> <p>This applies only to avocet nesting areas.</p>

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
					Methodology to be determined.
Low islands and spits	Annex 1 populations of European Importance: Avocet	Landform	Many low islands, spits or artificial platforms with shallow gradients, surrounded by/adjacent to standing water, measured periodically (frequency to be determined).	No significant reduction in low islands and spits, from reference level, subject to natural change.	Low islands/spits, surrounded by/adjacent to standing water, grading to <30cm above water level, or platforms locally frequent, during the breeding period. Methodology to be determined.
Saltmarsh, grassland and marsh	Annex 1 populations of European Importance: Avocet	Vegetation characteristics	Frequent patches of sparsely vegetated or bare ground (nesting), measured periodically (frequency to be determined).	No significant reduction from reference level. For saltmarsh habitat, this target is subject to natural change.	Vegetation cover usually <10%, or 30-40% where many predators. Breeding (summer) season. Methodology for assessing target to be determined.
Any habitat	Annex 1 populations of European Importance: Avocet	Food availability	Abundance of marine or freshwater insects, crustaceans, molluscs, fish or worms, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of food species year round, from reference level. Coastal habitats are subject to natural change.	Average biomass to be established during first reporting cycle, including e.g. <i>Gammarus</i> , <i>Corophium</i> , flies, beetles, <i>Neries</i> , <i>Hydrobia</i> , <i>Cardium</i> , gobies. Year-round. Reference level to be determined. Methodology to be determined.
Standing water	Annex 1 populations of European Importance: Avocet	Hydrology/flow	Stable water levels (nesting), measured periodically (frequency to be determined).	Water levels should not deviate significantly, from reference level, during the breeding season.	<15cm fluctuation is required during the breeding (summer) season. Applies only to avocet nesting areas. Methodology to be determined.
Standing water	Annex 1 populations of European Importance: Avocet	Water depth	Extensive shallow water (feeding), measured periodically (frequency to be determined).	Water depth should not deviate significantly from reference level, during the breeding season.	3-5cm water depth over >50% of water area, during breeding (summer) season. Applies only to avocet nesting

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
					areas. Methodology to be determined.
Standing water	Annex 1 populations of European Importance: Avocet	Salinity	Wetlands that are not too salty (feeding), measured periodically (frequency to be determined).	No significant change in wetland salinity during the breeding season.	Salinity of wetlands should not be greater than 25 % during the breeding (summer) season. Applies only to avocet nesting areas. Methodology to be determined.
Grassland and marsh	Migratory populations of European Importance: Gadwall, Shoveler and Teal	Vegetation characteristics	Frequent patches of medium to tall vegetation, close to open water (nesting), measured periodically (frequency to be determined).	No significant reduction in vegetation characteristics, from reference level, throughout the area used for nesting.	Several patches of vegetation of 20-60cm, <50m from open water, within areas used for nesting. Breeding (summer) season. Gadwall, shoveler and teal nesting areas only. Methodology to be determined.
Grassland and marsh	Migratory populations of European Importance: Gadwall, Shoveler and Teal	Absence of obstruction to view lines	Open terrain, relatively free of obstructions (feeding, anti-predator, roosting), measured periodically (frequency to be determined).	No significant reduction in view lines in feeding and roosting areas during the winter season.	Reference level to be determined. Methodology to be determined.
Standing water	Migratory populations of European Importance: Gadwall, Shoveler and Teal	Food availability	Abundance of water-surface invertebrates (feeding by young) measured periodically, (frequency to be determined).	No significant reduction in presence and abundance of prey species during breeding season.	Average biomass to be defined during first reporting cycle, including e.g. hatching midges. Breeding (summer) season. Reference level to be determined. Methodology to be determined.
Standing water	Migratory populations of European	Hydrology/flow	Fluctuating water levels, measured periodically (frequency to be	Dropping water levels providing a succession of surface water areas for	Water levels falling by 5-15% per month, from the time of mean hatch date

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
	Importance: Gadwall, Shoveler and Teal		determined).	feeding.	Breeding (summer) season. Gadwall, shoveler and teal nesting areas only. Methodology for assessing target to be determined.
Standing water	Migratory populations of European Importance: Gadwall, Shoveler and Teal	Water depth	Extensive shallow water (feeding), measured periodically (frequency to be determined).	No significant reduction in extent of shallow water (feeding).	<25cm over >50% of water area Year-round. Does not apply to avocet nesting areas during breeding season. Methodology for assessing target to be determined.
Standing water	Migratory populations of European Importance: Gadwall and Teal	Food availability	Abundance of soft-leaved and aquatic plants and seed bearing plants, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of food species in relation to reference level.	<u>For Gadwell:</u> >25% cover of one or more target species, e.g. <i>Glyceria fluitans</i> , <i>Agrostis</i> <i>stolonifera</i> and <i>Chara</i> , <i>Potamogeton</i> , <i>Ceratophyllum</i> spp. (Permanent and flood water). <u>For Teal:</u> >25% cover of <i>Polygonum</i> , <i>Eleocharis</i> , <i>Rumex</i> or <i>Ranunculus</i> spp (standing water). Year-round Methodology for assessing target to be determined.
Grassland-marsh/marshy, Standing water	Migratory populations of European Importance: Shoveler	Food availability	Abundance of aquatic plants, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of food species in relation to reference level.	>25% cover of one or more target species, e.g. <i>Scirpus</i> , <i>Eleocharis</i> , <i>Carex</i> , <i>Potamogeton</i> , <i>Glyceria</i> Year-round Methodology for assessing target to be determined.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Grassland-marsh/marshy, Standing water	Migratory populations of European Importance: Shoveler	Food availability	Abundance of aquatic invertebrates, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of prey species in relation to reference level.	Average biomass to be established during first reporting cycle, including e.g. <i>Hydrobia</i> , <i>crustaceans</i> , caddisflies, <i>diptera</i> , beetles. Year-round Methodology for assessing target to be determined.
Grassland - marsh/marshy	Migratory populations of European Importance: Shoveler	Hydrology/flow	Wet fields with many surface pools, ditches or channels (feeding), measured periodically (frequency to be determined).	No significant reduction in extent of shallow water.	20-30% of the area soggy or flooded. Breeding (summer) season. Applies to shoveler nesting areas only. Methodology for assessing target to be determined.
Saltmarsh	Migratory populations of European Importance: Teal	Food availability	Abundance of seed-bearing plants, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of food species in relation to reference level, subject to natural change.	>25% cover of one or more target species, e.g. <i>Salicornia</i> , <i>Atriplex</i> . Non-breeding season. Methodology for assessing target to be determined.
Standing water	Migratory populations of European Importance: Teal	Food availability	Abundance of aquatic invertebrates, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of prey species in relation to reference level.	Average biomass to be established during first reporting cycle, including e.g. <i>Hydrobia</i> , flies, caddisfly, beetles, bugs Year-round. Reference level to be determined. Methodology to be determined.
Grassland - improved/unimproved	Migratory populations of	Landscape	Open areas, including large fields (feeding, anti-	No significant reduction in open terrain, in relation	Areas with unrestricted views over >500m with an effective

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
	European Importance: White-fronted goose		predator), measured periodically (frequency to be determined).	to reference level.	field size >5ha Both improved and unimproved grassland used by gees at this site. Non-breeding season. Applies to goose feeding areas only. Methodology for assessing target to be determined.
Grassland - improved/unimproved	Migratory populations of European Importance: White-fronted goose	Food availability	Abundance of soft-leaved plants, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of food species in relation to reference level.	>25% cover of one or more target species, e.g. <i>Trifolium repens</i> , <i>Lolium perenne</i> , <i>Poa trivialis</i> , <i>Holcus lanatus</i> . Both improved and unimproved grassland used by geese at this site. Non-breeding season. Applies to goose feeding areas only. Methodology for assessing target to be determined.
Grassland - improved/unimproved	Migratory populations of European Importance: White-fronted goose	Vegetation characteristics	Predominantly short to medium grassland swards (feeding), measured periodically (frequency to be determined).	No significant reduction in extent of short to medium grassland sward, from reference level.	Sward height 10-20cm throughout feeding areas. Both improved and unimproved grassland used by geese at this site. Non-breeding season. Applies to goose feeding areas only. Methodology for assessing target to be determined.
Heathland	Internationally important populations of	Vegetation characteristics	Open ground with predominantly low vegetation (feeding), bare	No significant decrease from reference level.	Vegetation height mostly 20-60cm, with frequent bare patches of >2sq.m, 10-20% bare ground

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
	regularly occurring Annex 1 bird species: Nightjar		patches (nesting) and sparse woodland/scrub cover (feeding, roosting)		and <50% tree/scrub cover overall. Breeding (summer) season. Reference level to be determined. Methodology for assessing target to be determined.
Heathland, grassland and marsh	Internationally important populations of regularly occurring Annex 1 bird species: Nightjar	Food availability	Abundance of night-flying insects, measured periodically (frequency to be determined).	No significant decrease in presence and abundance of prey species from reference level. Average biomass to be established during first reporting cycle, including e.g. moths, beetles	Moths and beetles are important for Nightjar. Nightjar feed over all of these habitats at this site. Breeding (summer) season. Reference level to be determined. Methodology for assessing target to be determined.
Heathland, grassland and marsh	Internationally important populations of regularly occurring Annex 1 bird species: Hen harrier	Food availability	Abundance of live mammals and birds, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of prey species in relation to reference level.	Average biomass to be established during first reporting cycle, including e.g. small-medium sized mammals - voles to rabbit - and birds - pipits to gamebirds. Year-round. Reference level to be determined. Methodology for assessing target to be determined.

¹ reference level to be established during the first reporting cycle.



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cSAC: The Broads
SPA: Broadland
Component SSSI: Yare Broads and Marshes

Conservation objectives for the European Interest on the SSSI

The conservation objectives for the European interest on the SSSI are:

to maintain*, in favourable condition, the:

- Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior*.
- Calcareous fens with *Cladium mariscus* and species of the *Carex davallianae*.
- Natural eutrophic lakes with *Magnopotamion* or *Hydrocharition*-type vegetation.
- *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*).
- Transition mires and quaking bogs.
- Hard oligo-mesotrophic waters with benthic vegetation of *Chara* spp..

to maintain*, in favourable condition, the habitats for the population of:

- Desmoulin's whorl snail (*Vertigo moulinsiana*).
- Otter (*Lutra lutra*).

to maintain*, in favourable condition, the habitats for the populations of Annex1 bird species⁺ of European importance with particular reference to:

- open water
- swamp
- fen
- reedbed
- lowland wet grassland with ditches and water bodies.

+Bittern, Marsh harrier, Hen harrier and Ruff.

to maintain*, in favourable condition, the habitats for the populations of migratory bird species⁺ of European importance with particular reference to:

- open water
- swamp
- fen
- reedbed
- lowland wet grassland with ditches and water bodies.

+Gadwall and Shoveler.

to maintain*, in favourable condition, the habitats of the populations of waterfowl that contribute to the wintering waterfowl assemblage of European importance, with particular reference to:

- open water
- swamp and fen
- lowland wet grassland with ditches and water bodies.

* maintenance implies restoration if the feature is not currently in favourable condition.

The Conservation Objectives for The Broads candidate Special Area of Conservation and Broadland Special Protection Area are, in accordance with para C 10 of PPG 9, the reasons for which the cSAC was designated and the SPA classified. The entry of 30 January 1996 on the Register of European Sites gives the reasons for which the SPA was classified.

The **Broads cSAC** and **Broadland SPA** includes land within: Alderfen Broad SSSI, Ant Broads and Marshes SSSI, Barnby Broad and Marshes SSSI, Broad Fen, Dilham SSSI, Bure Broads and Marshes SSSI, Burgh Common and Muckfleet Marshes SSSI, Calthorpe Broad SSSI, Cantley Marshes SSSI, Crostwick Marsh SSSI, Decoy Carr, Acle SSSI, Ducan's Marsh, Claxton SSSI, Geldeston Meadows SSSI, Hall Farm Fen, Hemsby SSSI, Halvergate Marshes SSSI, Hardley Flood SSSI, Limpenhoe Meadows SSSI, Ludham-Potter Heigham Marshes SSSI, Poplar Farm Meadows, Langley SSSI, Priory Meadows, Hickling SSSI, Shallam Dyke Marshes, Thurne SSSI, Smallburgh Fen SSSI, Sprat's Water and Marshes, Carlton Colville SSSI, Stanley and Alder Carrs, Aldeby SSSI, Upper Thurne Broads and Marshes SSSI, Upton Broads and Marshes SSSI and Yare Broads and Marshes SSSI.

The **Broads cSAC** additionally includes land within: Damgate Marshes, Acle SSSI and Trinity Broads SSSI.

Favourable Condition Table for Yare Broads and Marshes SSSI

The Favourable Condition Table will be used by English Nature and other relevant authorities to determine if a site is in favourable condition. Favourable condition is achieved when the targets given below are met.

The favourable condition table should inform the scope and nature of any 'appropriate assessment' under the Habitats Regulations, but an appropriate assessment will also require consideration of issues specific to the individual plan or project. The favourable condition table does not by itself provide a comprehensive basis on which to assess plans and projects as required under Regulations 20-21, 24, 48-50 and 54 - 85. The scope and content of an appropriate assessment will depend upon the location, size and significance of the proposed project. English Nature will advise on a case by case basis.

Following an appropriate assessment, competent authorities are required to ascertain the effect on the integrity of the site. The integrity of the site is defined in para C10 of PPG9 as the coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified. The determination of favourable condition is separate from the judgement of effect upon integrity. For example, there may be a time-lag between a plan or project being initiated and a consequent adverse effect upon integrity becoming manifest in the condition assessment. In such cases, a plan or project may have an adverse effect upon integrity even though the site remains in favourable condition.

Annual counts for qualifying bird species will be used by English Nature, in the context of five year peak means, together with available information on UK population and distribution trends, to assess whether the SPA is continuing to make an appropriate contribution to the Favourable Conservation Status of the species across Europe.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Calcareous fens with <i>Cladium mariscus</i> and species of the <i>Caricion davallianae</i> Floodplain/valley mire (E33)	NVC type S2 S24 S25	Extent	Area (ha), measured periodically.	Maintain type and extent of NVC communities which are optimal for the interest feature. No significant decrease from reference level.	Map extent and position of main NVC communities, monitor every 5 years. Reference level to be determined.
		Sward composition	Frequency of <i>Cladium mariscus</i>	Maintain extent and abundance of <i>Cladium mariscus</i> .	Monitor <i>Cladium</i> every 5 years. Reference level to be determined.
			Floristic quality of <i>Cladium mariscus</i> swamp (S2), <i>Phragmites australis-Peucedanum palustre</i> fen (S24) and <i>Phragmites australis-Eupatorium cannabinum</i> fen (S25) through the abundance of 'typical' species	Within the area occupied by target communities, the eponymous species and others of constancy V should be frequent.	Monitor every five years.
			Floristic quality of small sedge component of the vegetation	Maintain extent and abundance of small sedge component.	Monitor small sedge component every 5 years. Reference level to be determined
			Frequency or cover of tree / scrub spp.	No more than 5% cover, if in discrete stands, or no more than occasional throughout the sward	
			Sward structure	Extent of bare mud or peat visible without disturbing vegetation	No more than 5% of mire area

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
			Frequency of hoof prints	No more than occasional over the mire as a whole	
		Water quality	Base rich, low fertility supply to vegetation	Maintain groundwater and other base rich-low nutrient water sources to the vegetation	These communities can be adversely affected by nutrient enrichment. In floodplain situations river water quality is critically important.
				Establish target base and NPK concentration and monitor annually.	It is important that irrigating waters are free from excessive plant nutrients. Reference level to be determined
		Water quantity	Hydrological regime.	Maintain appropriate hydrological regime to support recognised vegetation types. Reference level to be determined	Better understanding of the functioning of sites is required, including the importance of groundwater and piezometric head Install dipwells in a network or transect and measure at least bimonthly.
		Water table	Level of water table for the S2 community	Within range -15 to +40cm, with standing water between tussocks	Install dipwells in a network or transect and measure at least bimonthly.
Rare species.	Maintain or enhance populations of special or rare plant (and animal) species.	Species to be determined.	Identify special species and seek guidance in defining measures. Reference levels to be determined.		
Molinia meadows on calcareous, peaty or clayey-silt-laden soils (<i>Molinion caeruleae</i>)	NVC type M24	Extent	Total area (ha), mapped in relation to a site-specific reference level to be determined, in period early June - end of August.	No reduction in area and any consequent fragmentation without prior consent	Recoverable reduction = unfavourable; non-recoverable reduction = partially destroyed. Temporary reductions related to natural variation in hydrological conditions should be noted as such where information allows.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Unimproved marshy grassland		Sward composition: positive indicator species	Record the frequency of positive indicator species from the list below to give an overall total of 2 frequent and 3 occasional. Record in period early June - end of August. <i>Anagallis tenella, Angelica sylvestris, Cirsium dissectum, Erica tetralix, Eupatorium cannabinum, Filipendula ulmaria, Galium uliginosum/ Galium palustre, Orchidaceae spp., Pedicularis sylvatica, Potentilla erecta, small blue-green Carex spp. (leaves less than 5mm wide) (C. flacca, C.nigra, C.panicea), Sphagnum spp., Succisa pratensis, Valeriana dioica, Valeriana officinalis, Viola palustris.</i>	Overall total of at least two species/taxa frequent plus at least three species/taxa occasional throughout the sward.	Choice of species related to NVC types, restriction to unimproved grassland and wetness characteristics of habitat, all satisfactory when inside target. Among possible species that could be used, choice further restricted by ease of identification, visibility in recording period.
		Sward composition: frequency and cover of <i>Molinia caerulea</i>	Record the frequency and % cover of <i>Molinia caerulea</i> . Record in period early June - end of August.	At least frequent throughout the sward but no more than 80% cover	<i>Molinia</i> is a characteristic component of the community and should thus be at least frequent. However, increasing cover exceeding upper target is indicative of insufficient management by grazing or cutting.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		Sward composition: negative indicator species	Record the frequency and % cover of negative indicator species. Record in period early June- end of August. <i>Cirsium arvense, Cirsium vulgare, Rumex crispus, Rumex obtusifolius, Urtica dioica.</i>	No species more than occasional throughout the sward or singly or together more than 5% cover	Invasive species chosen to indicate problems of eutrophication and disturbance from various sources when outside target eg poaching, stock feeding.
		Sward composition: cover of <i>Juncus</i> spp	Record the % cover of <i>Juncus</i> species from groups A and B. Record in period early June - end of August. Group A: jointed rushes (<i>Juncus acutiflorus, J. articulatus, J. subnodulosus</i>) Group B: <i>Juncus conglomeratus, J. effusus and J. inflexus.</i>	All species combined no more than 80% cover, of which no more than 50% made up of spp. from Group B	<i>Juncus</i> spp can be characteristic components of the communities. However, increasing cover is indicative of insufficient management by grazing or cutting and/or waterlogging. Group B species may indicate problems of eutrophication from various sources when outside target eg stock feeding, fertiliser use.
		*Sward composition: negative indicator species.	Record the % cover of negative indicator species. Record in period early June - end of August. <i>Cirsium palustre.</i>	No more than 20% cover.	This species may be indicative of disturbance from various sources when outside target eg poaching, stock feeding.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		*Sward composition: negative indicator species.	Record the % cover of negative indicator species. Record in period early June - end of August. <i>Deschampsia cespitosa</i>	No more than 10% cover.	Increasing cover of <i>Deschampsia cespitosa</i> outside target may be indicative of insufficient management by grazing or cutting, overgrazing, disturbance by excessive poaching or altered hydrology eg reduced water movement in the soil profile during the year resulting in anaerobic conditions. Increasing cover may lead to reduced species richness in the community.
		*Sward composition: negative indicator species	Record the % cover or frequency of negative indicator species in period early June - end of August. All tree and scrub species excluding <i>Salix repens</i> and <i>Myrica gale</i> , considered together.	No more than 5% cover.	Invasive species outside target shows that habitat is not being managed sufficiently eg lack of or insufficient grazing/cutting
			NB If scrub/tree species in pastures are more than occasional throughout the sward but less than 5% cover, they are soon likely to become a problem if grazing levels are not sufficient or if scrub control is not being carried out.		
		*Sward composition: % cover of <i>Phragmites australis</i>	Record the % cover of <i>Phragmites australis</i> in period early June-end of August.	No more than 10% cover.	Increasing cover of <i>Phragmites australis</i> outside target may be indicative of insufficient management by grazing or cutting. Lack of management may ultimately convert the community to tall-fen in some geographical areas.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		Sward composition: % cover of <i>Myrica gale</i> .	Record the % cover of <i>Myrica gale</i> in period early June - end of August.	No more than 10% cover	If <i>Myrica</i> cover outside target this shows that habitat is not being managed sufficiently eg lack of or insufficient grazing/cutting
		Sward composition: negative indicator species.	Record the frequency and % cover of negative indicator species. Record in period early June - end of August. <i>Senecio aquaticus</i>	No more than occasional throughout the sward or more than 5% cover	Outside target can discourage hay/grazing management because the species is toxic to livestock, and is palatable when dry.
		Sward structure: average height	Record sward height in period early June - end of August. (Upper target refers to pastures only.)	M24a Sward 5 cm or greater (excluding <i>Juncus</i> spp.) but no more than 25% over 60 cm	Sward height above upper target shows that habitat is not being managed sufficiently eg lack of or insufficient grazing or if below lower target, is being overgrazed.
				M24b Sward 2 cm or greater (excluding <i>Juncus</i> spp.) but no more than 25% over 15 cm	
		Sward structure: litter	Record cover of litter where in a more or less continuous layer, distributed either in patches or in one larger area. Record in period early June - end of August for pastures.	Total extent no more than 25% of the sward	Outside target indicates biomass removal is insufficient eg lack of or insufficient grazing or not cut for hay.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		Sward structure: bare ground	Record extent of bare ground distributed through the sward, visible without disturbing the vegetation. Record in period early June - end of August.	No more than 10%	Outside target indicates problems with stock management eg poaching, supplementary feeding.
Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i>, <i>Alnion incanae</i>, <i>Salicion alvae</i>)	Parts of NVC types W2 and W5,6 and 7)	Extent	Extent/location of stands	<p>No loss of ancient semi-natural stands</p> <p>At least current area of recent semi-natural stands maintained, although their location may alter.</p> <p>At least the area of ancient woodland retained</p>	<p>* Stand loss due to natural processes eg in minimum intervention stands may be acceptable.</p> <p>* A high proportion of this type of woodland may be recent and hence a dynamic interchange with open wet communities may occur.</p> <p>* Stand destruction may occur if the understorey and ground flora are irretrievably damaged even if the canopy remains intact.</p> <p>* Loss = 0.5 ha or 0.5% of the stand area, whichever is the smaller.</p> <p>* 20% canopy cover is conventionally taken as the lower limit for an area to be considered as woodland. Stands of willow scrub may pose difficulties of definition.</p> <p>* Area and location of stands may be assessed remotely or by site visit.</p>

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		3.Regeneration potential	Successful establishment of young stems in gaps or on the edge of a stand	<ul style="list-style-type: none"> * Signs of seedlings growing through to saplings to young trees at sufficient density to maintain canopy density over a 10 yr period (or equivalent regrowth from coppice stumps). * No planting in stands. 	<ul style="list-style-type: none"> * A proportion of gaps at any one time may develop into permanent open space; equally some current permanent open space/glades may in time regenerate to closed canopy. * Regeneration may often occur on the edges of stands rather than in gaps within it. * In coppice most of the regeneration will be as stump regrowth. See JNCC Guidance Note on likely desirable levels of regeneration. * The minimum level of regeneration to be acceptable from a nature conservation viewpoint is likely to be much less than that needed where wood production is also an objective. * Assess this attribute by walking through the wood in spring/summer.
		4. Composition	Cover of native versus non-native species (all layers)	<ul style="list-style-type: none"> * At least the current level of site-native species maintained. * At least 90% of cover in any one layer of site-native or acceptable naturalised species. 	<ul style="list-style-type: none"> * In sites where there might be uncertainty as to what counts as site-native or as an acceptable naturalised species this must be made clear (eg the position of poplar). * Where cover in any one layer is less than 100% then the 90% target applies to the area actually covered by that layer.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
			Death, destruction or replacement of native woodland species through effects of non-native fauna or external unnatural factors	* Death, destruction or replacement of native woodland species through effects of introduced fauna or other external unnatural factors not more than 10% by number or area in a five year period.	* Factors leading to the death or replacement of woodland species could include pollution, including eutrophication from adjacent farmland; new diseases (eg alder dieback). * Damage to species by non-native species that does not lead to their death or replacement by non woodland species (eg damage from squirrels to trees that non-the-less survive) is not necessarily unacceptable in nature conservation terms. * Excessive browsing/grazing by even native ungulates may be considered an unnatural external factor where it leads to undesirable shifts in the composition/structure of the stand, although this may be picked up by attributes 2 or 5 anyway. * Assess this attribute by a walk through the site.
		5. Species, habitats, structures characteristic of the site.	Ground flora type Distinctive and desirable elements for a given site eg. locally uncommon species such as <i>Carex elata</i> ; veteran trees or rich invertebrate assemblages. Patches of associated habitats and transitions eg to ash wood, open fen and open water	* 80% of ground flora cover referable to relevant NVC wet woodland community (W 2, 5, 6 and 7) * Distinctive elements maintained at current levels and in current locations (where appropriate). * Patches and transitions maintained in extent and where appropriate location.	* Changes leading to these targets not being met may be acceptable where this is due to natural processes. * Distinctive elements and patches should be marked on maps for ease of checking in the field wherever possible. * If there are species groups/assemblages that cannot be assessed directly on a general site visit then surrogate features should be given where possible, eg dead wood concentrations for associated invertebrates.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Transition mires and quaking bogs. Transitional as from open water to solid peat and/or from one trophic status to another.	NVC type S27 M5 M9	Extent	Area (ha), measured periodically.	Maintain type and extent of NVC communities which are optimal for the interest feature. No significant decrease from reference level.	Map extent and position of main NVC communities, monitor every 5 years. Reference level to be determined.
		Sward structure	Frequency of hoof prints	No more than occasional over the mire as a whole	
			Extent of bare mud or peat visible without disturbing vegetation	No more than 5% of mire area	
Floodplain/valley mire (E32)		Sward composition	Floristic quality of <i>Carex rostrata-Potentilla palustris</i> fen (S27), <i>Carex rostrata-Sphagnum squarrosum</i> mire (M5) and <i>Carex rostrata-Calliergon cuspidatum/giganteum</i> mire (M9) through the abundance of 'typical' species	Within the area occupied by target communities, the eponymous species and others of constancy V and IV should be abundant.	
			Frequency or cover of tree / scrub spp.	No more than 5% cover, if in discrete stands, or no more than occasional throughout the sward	It is acceptable to have component wet woodland communities and so the presence of scattered or weak scrub is not always a negative feature.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		Water quality	Maintenance of trophic status	Maintain the raft characteristics. Exclude surface and drainage water likely to increase fertility.	The balance between seepage and surface water must be maintained, and attention given to any differences of base-richness between competing sources of water.
		Water quantity	Stable groundwater	Water levels which does not fluctuate more than 30cm annually.	Install dipwells and measure at least bimonthly. Control of the range of vertical water level fluctuation may be important to maintain the delicate balance between base-rich and base-poor conditions.
		Physical condition of raft	Degree of movement capable by raft.	Presence of raft that trembles when walked upon.	Check for evidence of trophic change.
		Rare species	Maintain or enhance populations of special or rare plant (and animal) species	Species to be determined.	Identify special species and seek guidance in defining measures. Reference levels to be determined.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
22.12/44 Hard oligo-mesotrophic waters with benthic vegetation of <i>Chara</i> formations Turf ponds and ditch systems.	Almost exclusively type '4' of the GB Standing Water Classification. Very rarely types '5' and '10'.	Extent of <i>Chara</i> beds.	Check extent of <i>Chara</i> beds in July on an annual basis.	Maintain type and extent of <i>Chara</i> vegetation which is optimal for the interest feature. No significant decrease from reference level. Reference level to be determined.	<i>Chara</i> community. <i>Chara</i> formations of various species. Endangered/Vulnerable/Rare species are <i>Chara intermedia</i> , <i>Chara baltica</i> , <i>Chara canescens</i> , <i>Chara rudis</i> and <i>Chara connivens</i> ; and nationally scarce species are <i>Chara aspersa</i> , <i>Chara contraria</i> , <i>Chara pedunculata</i> and <i>Chara curta</i> . All are potentially components of a supporting community of <i>Myriophyllum spicatum</i> , <i>Potamogeton</i> species, <i>Callitriche</i> species and <i>Nymphaea alba/Nuphar lutea</i> . Turf ponds often fringed by <i>Phragmites australis</i> , <i>Typha angustifolia</i> and <i>Schoenoplectus lacustris</i> . Baseline survey should be carried out to determine present extent of <i>Chara</i> beds. Check for deterioration, extent of epiphytic growth on <i>Chara</i> . "Holes" in <i>Chara</i> beds should be monitored. <i>Elodea canadensis</i> should be absent. As <i>Chara</i> species are a colonising aspect of seral progression supporting macrophyte community may have to be managed to prevent seral progression. Extent will be variable according to site and can be variable according to seasonal changes In many cases <i>Chara</i> will be dominant feature.
		Extent of supporting community including emergent vegetation.	Check community of associated macrophytes including, rare species, on an annual basis. Rare species include <i>Najas marina</i> . Maintain <i>Chara</i> and other species diversity.	Stable not expanding or contracting supporting community over 5 year period within limits of $\pm 10\%$ annually.	

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		Water quality	Absence of filamentous algae and unicellular algal blooms. Establish Total P range by quarterly measurements over 3 year period, thereafter annually July/August.	For <i>Chara</i> lake 30 \square g l ⁻¹ total phosphorus or below. Eutrophic conditions above 30 \square g l ⁻¹ total phosphorus should not be prevalent.	Filamentous algae should be absent. The range of marl lakes exhibit a continuum of trophic condition from oligotrophy to low eutrophy. So the trophic condition for each marl lake type should be maintained. If filamentous algae present. Check for diffuse or point sources of pollution. Check Total P levels in aquifer if aquifer fed, check also that site not used for black-headed gull roosting or breeding. The target level should be set for individual SAC's and an acceptable range established. Increases in Total P level suggest need to move from annual July/August check back to more intensive quarterly samples to verify whether change is real.
		Sediment	Check condition of sediment and measure overall cover of marl every 10 years.	Marl production desirable, although this may be low or absent in oligotrophic hard waters. Some peat slumping acceptable, provided this is not induced due to land drainage.	Check immediate catchment area for drainage or land use change which might induce high sediment loads to enter system.
		Hydrology	Check water level in July annually.	Maintenance of stable water level desirable, although seasonal fluctuations expected.	Water level change downwards acceptable only in dry years. If lake level lowering due to outside water demands such as aquifer abstraction then counter measures need to be instigated.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
22.13 Natural eutrophic lakes with Magnopotamion or Hydrocharitio n type vegetation. Standing water-Broads,turf ponds and ditch systems	NVC types: A3 A9 A13 A4 Types '7', '8', '9' and '10' of the GB Standing Water Classification.	Extent of community.	Check extent of beds in July/August every 4 years.	Extensive beds of submerged macrophytes should be present. Maintain mixed community.	Submerged vegetation characterised by broad leaved <i>Potamogeton</i> species such as <i>Potamogeton perfoliatus</i> , <i>P lucens</i> , <i>P crispus</i> , <i>P natans</i> , <i>P x salicilifolius</i> , <i>P coloratus</i> , <i>P polygonifolius</i> , <i>P gramineus</i> , <i>P. alpinus</i> and <i>Hydrocharitio</i> type vegetation. <i>Hydrocharis morsus-ranae</i> is a very rare associate with the <i>Magnopotamion</i> in the UK. Its community components are present, however, mainly <i>Spirodela polyrhiza</i> , <i>Lemna minor</i> , <i>Hippuris vulgaris</i> , <i>Utricularia vulgaris</i> and <i>Apium inundatum</i> . Community should be mixed and no one species should be present above 40% level of total amount of macrophyte presence.
		Extent of <i>Potamogeton</i> species <i>Magnopotamion</i> .	Check species presence in July/August every 4 years.	Maintain species presence of all <i>Magnopotamion</i> and fine leaved <i>Potamogetons</i> .	No one <i>Potamogeton</i> species should be present above 40% level of total amount or level of macrophyte presence (see Water Quality comment).
		Extent of nationally scarce or threatened species.	Establish population size and position of nationally scarce, rare or threatened species over a period of 3 years, on a quarterly basis; thereafter every two years in July/August.	Maintain presence of all nationally scarce, rare or threatened plant species.	Nationally scarce, rare or threatened species can vary in population size and extent due to temporal/seasonal changes in climate which affects physical variables such as water temperature.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		Water quality	Arrange for analysis of quarterly measurements of Total P for first three years; thereafter annually in July/August.	Maintain water quality particularly Total P levels. For southern systems 100 $\mu\text{g l}^{-1}$ or below, down to 65 $\mu\text{g l}^{-1}$.	The variable targets for Total P reflects the geographical range of this trophic state. The target for Total P should be set for individual SAC's and an acceptable range established. Increases in Total P suggest a need to move from annual July/August check, back to more intensive quarterly samples to verify whether change is real. Also check for cover shifts of macrophytes and dominant presence of pollution tolerant species above 40% level such as <i>Potamogeton pectinatus</i> , <i>Myriophyllum spicatum</i> and/or <i>Ceratophyllum demersum</i> .
		Water quantity	Check lake levels during July/August.	Maintain hydrology of lake or ditch system.	Hydrology involves not only lake or ditch levels but flushing rates; prevent lowering or raising of lake or ditch level through modification of outfalls. With ditch systems aim for constant high water table throughout the year Water abstraction may represent a significant issue through the reduction of ground water and flushing flows into marginal ditch systems.
		Sediment	Check for excessive growths of individual macrophytes ie above 40%.	Maintain sediment quality and quantity.	Effects of increased macrophyte growth also relates to water quality; if this is at target levels, then enrichment of sediments is an issue if broad leaved <i>Potamogeton</i> species decline and fine leaved <i>Potamogeton pectinatus</i> increases above 40% level or <i>Myriophyllum spicatum</i> / <i>Ceratophyllum demersum</i> become dominant. Introduced fish and recreational use of site might through sediment disturbance move sites out of favourable condition. Check for increases in siltation from catchment use changes or changes in sewage treatment.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
River	Otter <i>Lutra lutra</i>	Water quality	EA scale	"Good", with no pollution incidents	Refer to Environment Agency for data
		Flow rate	Mean annual flow rate	No reduction attributable to increased abstraction.	Data from Environment Agency
		Site integrity	Total area	No reduction of fragmentation of area	
		Fish stocks	EA assessment	Fish stocks appropriate to the nutrient status of the river No significant decline in fish biomass or species diversity	Refer to Environment Agency for sample data
		Disturbance	Extent of public access to river	No significant change to river or bankside usage; no significant development	
		Bankside cover	Proportion of bank lined with trees, scrub or other thick cover	No overall permanent decrease	Some change acceptable as long as it is appropriately mitigated
		Presence of otters	Signs of otters	Signs of otters found at least once per year	Use data from national or county surveys

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Rivers fens	Desmoulin's whorl snail <i>Vertigo moulinsiana</i>	structure and composition of marginal vegetation	Length or area of stand of appropriate vegetation	The extent of suitable habitat should be maintained, compared to the extent on a baseline map, over appropriate lengths of river or area of fen or pool margin [length of river or area of fen or swamp, and number of sample stretches to be decided locally]. Suitable vegetation will be dense, unbroken stands of <i>Glyceria maxima</i> , <i>Carex riparia</i> , <i>C. acutiformis</i> , <i>C. paniculata</i> , <i>Cladium mariscus</i> and/or sparse <i>Phragmites</i> and <i>Phalaris arundinacea</i> .	It is expected that traditional and accepted river management will cause local deterioration of some stands but the aim is to ensure that habitat in appropriate condition is present at frequent intervals along a river corridor. The snail appears to be able to colonise new adjacent stands rapidly, and closely spaced, fragmented patches may provide acceptable conditions for this species. Habitat should be a suitable size and linked to rivers and waterways hydrologically and not separated by barriers such as mown paths.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Rivers fens		water table	1. depth below ground level; 2 & 3. vegetation indicators of drying out.	1. Water table must be close to the surface so that the ground remains squelchy all year, i.e. never drying out, so that, even in high summer, water will rise when the soil is trodden. Winter flooding is permissible. 2. Not more than 10% (occasional on the DAFOR scale) replacement of preferred dominant species by dense tall reed or by plants of drier conditions, e.g. <i>Urtica dioica</i> , <i>Epilobium hirsutum</i> , and low grasses invading the litter layer, within pre-selected stands (as selected for	<i>V. mouliniana</i> requires highly humid conditions which are met by a high water table below the stands of vegetation in which it lives. Unfavourably wet conditions can result from prolonged flooding in summer or water penning being set too high. Current research (2000-01) will refine acceptable limits and measures for soil moisture. measuring extent). 3. Not more than 10% (occasional on the DAFOR scale) replacement of tall monocotyledons by plants preferring wetter conditions, e.g. <i>Rorippa nasturtium-aquaticum</i> , <i>Apium nodiflorum</i> and <i>Berula erecta</i> .
Rivers fens		vegetation height	height of bulk of the vegetation	Average height of the stands no less than 50 cm.	<i>V. mouliniana</i> requires tall leaves on which it lives most of the year. Heavy grazing and mowing may be detrimental if it removes most taller clumps.
Rivers fens		shading by shrubs and trees (e.g. willow, alder)	proportion of habitat	Less than 10% increase in area of shade, compared to extent on the baseline map.	

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
rivers fens		water quality	Biological class - Environment Agenc's General Quality Assessment scheme. Assess every 5 years River Ecosystem Class. Assess against Environment Agency monitoring results. Suspended solids	>= 'b' In addition, no drop in class from exiting situation. >= RE3 In addition, no drop in class from exiting situation.	Although the snail lives out of the water, water quality may influence vegetation structure and perhaps the microflora living on the leaf surfaces where the snail feeds, and chemical quality may directly affect the snail when it is submerged during floods. Future experience and research may indicate that these variables are inapplicable to <i>V. moulinsiana</i> . No values are given for suspended solids as this pollutant has no direct influence on the condition of the habitat for moulinsiana. No monitoring targets are set for hardness but assessments for projects must take account of the snail's need for water whose hardness must not fall below value expected for the catchment.
All habitats: Grassland Improved, Swamp, Marginal and Inundation, Standing Water	Annex 1 species of European importance and waterfowl assemblage including migratory species of European and national importance.	Extent of habitat.	Area (ha), measured periodically (frequency to be determined).	No significant decrease from reference level.	For all habitats for all qualifying species. Methodology for assessing target to be determined. Reference level to be determined.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
		Disturbance in roosting and feeding areas	Reduction or displacement of birds, measured periodically (frequency to be determined).	No significant displacement of birds attributable to human disturbance in relation to reference level.	All qualifying breeding and wintering annex 1 and migratory species. Methodology for assessing target to be determined. Reference level to be determined.
All habitats: Grassland Improved, Swamp, Marginal and Inundation, Standing Water	Annex 1 species of European importance.	Food Availability	Abundance of live mammals and birds, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of food species year round in relation to reference level.	Small-medium sized mammals (voles, mice, rabbits) and birds (pipits to ducks) are important prey in the breeding season for marsh harriers and during the winter for hen harriers. Methodology for assessing target to be determined. Reference level to be determined.
Grassland Improved	Annex 1 species of European importance and migratory species of national importance.	Absence of obstruction to viewlines	Open terrain relatively free of obstructions (feeding, anti-predator, roosting), measured periodically (frequency to be determined).	No significant reduction in view-lines in feeding and roosting areas during the winter season.	White-fronted goose and wigeon prefer unrestricted views over 500 metres. Ruff and bean goose prefer unrestricted views over 200 metres. Methodology for assessing target to be determined.
Grassland Improved	Annex 1 species of European importance.	Food Availability	Presence and abundance of soil and ground surface invertebrates, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of prey species during the winter season in relation to reference level.	Dipteran flies, beetles and earthworms are important for Ruff. Methodology for assessing target to be determined. Reference level to be determined.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Grassland Improved	Migratory species of national importance.	Food availability	Presence and abundance of soft leaved plants , measured periodically (frequency to be determined).	No significant reduction in presence and abundance of food species during the winter season in relation to reference level.	<i>Trifolium repens, Lolium perenne, Poa trivialis</i> and <i>Holcus lanatus</i> are important for white-fronted goose. <i>Lolium, Glyceria, Agrostis and Alopecurus spp.</i> for wigeon. Methodology for assessing target to be determined. Reference level to be determined.
Grassland Improved	Nationally important migratory species.	Food availability	Presence and abundance of rough and smooth meadow grasses and crops, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of food species during the winter season in relation to reference level.	<i>Poa spp.</i> , potatoes, sugar beat and wheat are important for bean goose. Methodology for assessing target to be determined. Reference level to be determined.
Grassland Improved	Annex 1 species of European importance and migratory species of national importance.	Vegetation characteristics	Predominantly short grassland swards (feeding and roosting during the winter period), measured periodically (frequency to be determined).	Vegetation height throughout areas used for feeding and roosting during the winter season should not deviate significantly.	Bean goose require a sward height <20 cm within feeding areas during the winter season. White-fronted goose require a sward height 10-20 cm within feeding areas during the winter season. Ruff require a vegetation height of <10cm within roostin areas during the winter season. Wigeon require a sward height <5 cm within feeding areas during the winter season. Methodology for assessing target to be determined.
Grassland Improved	Nationally important migratory species.	Proximity of roosting areas to feeding areas	Roosting areas close to feeding areas, measured periodically (frequency to be determined).	No significant reduction in proximity of roosting areas to feeding areas during the winter season.	Wigeon require daytime feeding areas and roosting areas within c50 metres of each other. Methodology for assessing target to be determined.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Grassland Improved	Annex 1 species of European importance.	Hydrology/ Flow	Wet fields with surface pools, measured periodically (frequency to be determined).	No significant reduction in soggy or flooded areas during the winter season.	Ruff prefer permanently wet and flooded areas with a water depth of <3 cm. Methodology for assessing target to be determined.
Swamp, Marginal and Inundation	Annex 1 species of European importance.	Landscape	Large, unbroken expanse of emergent vegetation (nesting, feeding, concealment), measured periodically (frequency to be determined).	No significant reduction in expanse of emergent vegetation year round.	Bittern and Marsh Harrier require continuous reed over >20ha. Methodology for assessing target to be determined.
Swamp, Marginal and Inundation	Annex 1 species of European importance.	Vegetation characteristics	Pure reed stand with vigorous growth over whole area (nesting, concealment), measured periodically (frequency to be determined).	No significant reduction in extent of vigorous growth over the pure reed stand, maintained through cutting regime.	Bittern and marsh harrier require at least 30% of the reedbed uncut and the remainder not more than 6 years old with no more than 20% cut in any year. Methodology for assessing target to be determined.
Swamp, Marginal and inundation	Annex 1 species of European importance.	Water depth	Shallow water within reeds plus frequent deep pools and channels (feeding), measured periodically (frequency to be determined).	Water depth and extent of shallows within reeds should not deviate significantly with no significant reduction in the presence of deep pools and channels year round.	Bittern and marsh harrier require water throughout the reedbed of 10-30cm, and bittern also require pools 2-4m deep. Channels for bittern should be up to 2.5m deep, consisting of a deep central channel (>1.5m) and 1m deep/5m wide shallow margin on at least one side. Methodology for assessing target to be determined.
Swamp, Marginal and Inundation	Annex 1 species of European importance.	Hydrology flow	Stable Water levels, measured periodically (frequency to be determined).	Water levels should not deviate significantly during the breeding season.	<10cm fluctuation is required during the breeding season for Marsh Harrier. Methodology for assessing target to be determined.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Swamp, Marginal and Inundation Standing Water	Annex 1 species of European importance.	Food Availability	Presence and abundance of fish and amphibians, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of prey species year round, in relation to reference level.	Eel, rudd, roach of 6-35cm and frogs/toads are important for Bittern. Methodology for assessing target to be determined. Reference level to be determined.
Standing Water	Migratory species of European and national importance.	Food Availability	Presence and abundance of aquatic plants, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of food species during the winter season in relation to reference level.	<i>Glyceria fluitans, Agrostis stolonifera, Chara, Potamogeton and Ceratophyllum spp</i> for gadwall. <i>Scirpus, Eleocharis, Carex, Potamogeton</i> and <i>Glyceria</i> for shoveler. <i>Chara, Nitella</i> and <i>Potamogeton spp.</i> are important for pochard and tufted duck. <i>Chara, Cladophora, Potamogeton, Ruppia, Ranunculus</i> and <i>Elodea</i> are important for Coot. Methodology for assessing target to be determined. Reference level to be determined.
Standing Water	Nationally important migratory species.	Food Availability	Presence and abundance of seed bearing plants, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of food species during the winter season in relation to reference level.	<i>Polygonum, Eleocharis, Rumex</i> and <i>Ranunculus</i> are important for Teal. Methodology for assessing target to be determined. Reference level to be determined.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Standing Water	Migratory species of European and national importance.	Food availability	Presence and abundance of aquatic invertebrates, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of prey species during the winter season in relation to reference level.	Hydrobia, crustaceans, caddisflies, diptera and beetles are important for shoveler. Hydrobia, flies, caddisfly, beetles and bugs are important for teal. Methodology for assessing target to be determined. Reference level to be determined.
Standing Water	Nationally important migratory species.	Food availability	Presence and abundance benthic invertebrates, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of prey species during the winter season in relation to reference level.	Chironomid larvae are important for pochard. <i>Dreissena polymorpha</i> , chironomid larvae, <i>Gammarus</i> and <i>Hydrobia</i> are important for tufted duck. Methodology for assessing target to be determined. Reference level to be determined.
Standing Water	Nationally important migratory species.	Food availability	Presence and abundance of surface and benthic invertebrates, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of prey species during the winter season in relation to reference level.	Mytilus, <i>Dreissena polymorpha</i> and caddis-fly larvae are important for coot. Methodology for assessing target to be determined. Reference level to be determined.
Standing Water	Nationally important migratory species.	Food availability	Presence and abundance of fish, measured periodically (frequency to be determined).	No significant reduction in presence and abundance of prey species during the winter season in relation to reference level.	Fish of 10-25 cm are important for cormorant. Fish of 3-21 cm are important for great crested grebe. Methodology for assessing target to be determined. Reference level to be determined.

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Standing Water	Migratory species of European and national importance.	Water depth	Areas of shallow medium and deep water (feeding), measured periodically (frequency to be determined).	Water depths should not deviate significantly during the winter season.	<p>Cormorant require a water depth of 2-10m.</p> <p>Great crested grebe require a water depth of 1-3m.</p> <p>Gadwall require a water depth of <25cm. A kleptoparasitic relationship with Coot can allow Gadwall to potentially exploit deeper areas up to 2m in depth.</p> <p>Shoveler and teal require a water depth of <30cm.</p> <p>Coot require a water depth of 0.5-2m.</p> <p>Pochard and tufted duck require a water depth of 2-5m.</p> <p>Methodology for assessing target to be determined.</p>
Standing Water	Annex 1 species of European importance.	Water area	Large open areas of water(feeding), measured periodically (frequency to be determined).	No significant reduction in the area of open water for feeding year round.	<p>Bittern require one or more freshwater pools of >0.5ha not exceeding 20% of reedbed area overall.</p> <p>Methodology for assessing target to be determined.</p>

Operational Feature	Criteria Feature	Attribute	Measure	Target	Comments
Standing Water	Migratory species of national importance.	Water area	Large open areas of water(feeding, roosting), measured periodically (frequency to be determined).	No significant reduction in the area of open water for feeding and roosting during the winter season.	<p>Cormorant require one or more fresh waters of >20ha.</p> <p>Pochard require one or more fresh waters of >6ha.</p> <p>Bean geese require one or more freshwaters of 3-6 ha.</p> <p>Tufted duck require one or more freshwaters of >5ha.</p> <p>Coot require one or more freshwaters of >2ha.</p> <p>Great crested grebe require one or more freshwaters of >1ha.</p> <p>Methodology for assessing target to be determined.</p>