

The Broads Special Area of Conservation/Broadland Ramsar

Evidence Pack

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The Broads Special Area of Conservation/Broadland Ramsar – Evidence Pack

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Further information

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1. Site Details

From The Broads Special Area of Conservation citation:

The Broads in East Anglia contain several examples of naturally nutrient-rich lakes. Although artificial, having been created by peat digging in medieval times, these lakes and the ditches in areas of fen and drained marshlands 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.

The stonewort – pondweed – water-milfoil – water-lily (*Characeae* – *Potamogeton* – *Myriophyllum* – *Nuphar*) associations are well-represented, as are club-rush – common reed *Scirpo* – *Phragmitetum* associations. The dyke (ditch) systems support vegetation characterised by water-soldier *Stratiotes aloides*, whorled water-milfoil *Myriophyllum verticillatum* and broad-leaved pondweed *Potamogeton natans* as well as being a stronghold of little whirlpool ram's-horn snail *Anisus vorticulus* and Desmoulin's whorl snail *Vertigo moulinsiana* in East Anglia. The range of wetlands and associated habitats also provides suitable conditions for otters *Lutra lutra*.

The Broads is the richest area for stoneworts (charophytes) in Britain. The core of this interest is the Thurne Broads and particularly 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 supports a number of rare and local charophyte species, including *Chara aspera*, *C. baltica*, *C. connivens*, *C. contraria*, *C. curta*, *C. intermedia*, *C. pedunculata*, *Nitella mucronata*, *Nitellopsis obtusa*, *Tolypella glomerata* and *T. intricata*.

The complex of sites contains the largest blocks of alder *Alnus glutinosa* wood in England. Within the complex complete successional sequences occur from open water through reedswamp to alder woodland, which has developed on fen peat. There is a correspondingly wide range of flora, including uncommon species such as marsh fern *Thelypteris palustris*.

This site contains the largest example of calcareous fens in the UK. The great fen-sedge *Cladium mariscus* habitat occurs in a diverse set of conditions that maintain its species richness, including small sedge mires, and areas where great fen-sedge occurs at the limits of its ecological range. The habitat type forms large-scale mosaics with other fen types, fen meadows (with purple moor-grass *Moilinia caerulea*), open water and woodland, and contains important associated plants such as fen orchid *Liparis loeselii*, marsh helleborine *Epipactis palustris*, lesser tussock-sedge *Carex diandra*, slender sedge *C. lasiocarpa* and fibrous tussock-sedge *C. appropinquata*.

There are also areas of short sedge fen (both black bog-rush – blunt-flowered rush *Schoenus nigricans* – *Juncus subnodulosus* mire and bottle sedge – moss *Carex rostrata* – *Calliergon cuspidatum/giganteum* mire), which in places form a mosaic with common reed – milk-parsley *Phragmites australis* – *Peucedanum palustris* fen. The Broads also

contain examples of transition mire, that are relatively small, having developed in re-vegetated peat- cuttings as part of the complex habitat mosaic of fen, carr and open water.

2. Reasons for European Designation

The Broads Special Area of Conservation (SAC) is designated for the following features:

- H3140 Hard oligo-mesotrophic waters with benthic veg of *Chara* spp.
- H3150 Natural eutrophic lakes with *Magnopotamion* or *Hydrocharition*
- H6410 Molinia meadows on calcareous, peat or clay-silt soil
- H7140 Transition mires and quaking bogs
- H7210 Calcareous fens with *C. mariscus* and species of *C. davallianae*
- H7230 Alkaline fens
- H91E0 Alluvial woods with *A. glutinosa*, *F. excelsior*
- S1016 Desmoulin's whorl snail, *Vertigo moulinsiana*
- S1355 Otter, *Lutra lutra*
- S1903 Fen orchid, *Liparis loeselii*
- S4056 Little ram's-horn whirlpool snail, *Anisus vorticulus*

The Broadland Ramsar is designated for the following features:

- Bewick's swan, *Cygnus columbianus bewickii* - Wintering
- Floodplain alder woodland
- Floodplain fen
- Gadwall, *Anas strepera* - Wintering
- Shoveler, *Anas clypeata* - Wintering
- Wetland invertebrate assemblage
- Wetland plant assemblage
- Wigeon, *Mareca penelope* – Wintering

Links to Conservation Advice:

- [Conservation Objectives](#)
- [Conservation Objectives Supplementary Advice](#)
- [JNCC Ramsar Information Sheet](#)

3. Nutrient Pressure and Water Quality

Nutrient pressure(s) for which the site is unfavourable:

- Nitrogen
- Phosphorus

In the Conservation Objectives Supporting Advice for the Broads SAC it states for phosphorus to ‘**maintain and, where necessary, restore stable nutrient levels appropriate for lake type**’ and for nitrogen it states to ‘**maintain and restore a stable nitrogen concentration**’.

Water Quality data is reported against the relevant Site of Special Scientific Interest (SSSI) units within the SAC for the five SSSIs within the Broads SAC where there is currently good evidence that they are unfavourable due to nutrients.

Table 1 – Ant Broads and Marshes site attributes with water quality targets

Unit name	SSSI Unit	Monitoring point ID	WQ Target		WQ Monitoring Data ¹		Compliance with target – Pass/Fail and % reduction needed to achieve the WQ Target	
			TP (µg/l)	TN (µg/l)	TP (µg/l)	TN (µg/l)	TP	TN
Barton Broad	33	Barton Broad (R. Ant) AN-ANT160	30	1.07	64	1.9	FAIL 53% reduction needed	FAIL 44% reduction needed
Instead Holmes	34	No monitoring	30	1.07	-	-	Unknown	Unknown
Catfield Broad	35	No monitoring	30	1.07	-	-	Unknown	Unknown
Cromes Broad	36	Cromes Broad Edge sample from shore AN-ANT170E	30	1.07	44	1.7	FAIL 30% reduction needed	FAIL 58% reduction needed

¹ Water Quality Monitoring data from EA WIMS database. Nutrient concentrations reported are the 2019 annual mean for Total Phosphorus (TP) and Total Nitrogen (TN).

Reedham Water	37	No monitoring	30	1.07	-	-	Unknown	Unknown
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Table 2 – Bure Broads and Marshes site attributes with water quality targets

Unit name	SSSI Unit	Monitoring point ID	WQ Target		WQ Monitoring Data ²		Compliance with target – Pass/Fail and % reduction needed to achieve the WQ Target	
			TP (µg/l)	TN (µg/l)	TP (µg/l)	TN (µg/l)	TP	TN
Decoy Broad	4	Decoy Broad R. Bure AN-BUR158	30	1.07	74	3.04	FAIL 60% reduction needed	FAIL 65% reduction needed
Hoveton Great Broad	10	Hoveton Great Broad AN-BUR158	30	1.07	70	2.5	FAIL 57% reduction needed	FAIL 57% reduction needed
Hudson's Bay	11	Hudson's Bay Hoveton Great Broad, R/ Bure AN-BUR158HB	30	1.07	104	1.79	FAIL 72% reduction needed	FAIL 40% reduction needed
Ranworth Broad	12	Ranworth Broad AN-BUR170A	30	1.07	94	2.99	FAIL 68% reduction needed	FAIL 64% reduction needed

² Water Quality Monitoring data from EA WIMS database. Nutrient concentrations reported are the 2019 annual mean for Total Phosphorus (TP) and Total Nitrogen (TN).

Cockshoot Broad	13	Cockshoot Broad AN-BUR160A	30	1.07	49	1.37	FAIL 39% reduction needed	PASS
Ranworth Flood	14	Ranworth Flood AN-BUR170RF	30	1.07	1017*	3.16*	FAIL 97% reduction needed	FAIL 68% reduction needed
*TP data for Ranworth Flood is a mean of 7 samples for TP and 4 samples for TN taken in 2017								

Table 3 – Trinity Broads SSSI site attributes with water quality targets

Unit name	SSSI Unit	Monitoring point ID	WQ Target		WQ Monitoring Data ³		Compliance with target – Pass/Fail and % reduction needed to achieve the WQ Target	
			TP (µg/l)	TN (µg/l)	TP (µg/l)	TN (µg/l)	TP	TN
Filby Broad	20	Filby Broad AN-FIL010	30	1.07	42	0.89	FAIL 29% reduction needed	PASS
Lily broad	21	Lily Broad AN-LIL010	30	1.07	78**	1.19**	FAIL 62% reduction needed	FAIL 10% reduction needed
Ormesby Broad	22	Ormesby Broad – AN-ORM010	30	1.07	52	1.24	FAIL 42%	FAIL 14%

³ Water Quality Monitoring data from EA WIMS database. Nutrient concentrations reported are the 2019 annual mean for Total Phosphorus (TP) and Total Nitrogen (TN).

							reduction needed	reduction needed
Ormesby Little Broad	23	Ormesby Little Broad AN-ROL020	30	1.07	50	0.94	FAIL 40% reduction needed	PASS
Rollesby Broad Sailing Club	24	Rollesby Broad Sailing Club AN-ROL010	30	1.07	39	1.01	FAIL 23% reduction needed	PASS
**Data for Lily Broad is the mean of 5 (TN) and 8 (TP) samples from 2017								

Table 4 – Upper Thurne Broads and Marshes site attributes with water quality targets

Unit name	SSSI Unit	Monitoring point ID	WQ Target		WQ Monitoring Data ⁴		Compliance with target – Pass/Fail and % reduction needed to achieve the WQ Target	
			TP (µg/l)	TN (µg/l)	TP (µg/l)	TN (µg/l)	TP	TN
Heigham Sound	15	Heigham Sound (R. Thurne) AN-THR040	30	1.07	54	1.97***	FAIL 44% reduction needed	FAIL 45% reduction needed
Hickling Broad	16	Hickling Broad (R. Thurne) AN-THR030A	30	1.07	52	1.6	FAIL 42% reduction needed	FAIL 33% reduction needed

⁴ Water Quality Monitoring data from EA WIMS database. Nutrient concentrations reported are the 2019 annual mean for Total Phosphorus (TP) and Total Nitrogen (TN).

Horsey Mere	17	Horsey Mere (R. Thurne) AN-THR020	30	1.46	51	2.22	FAIL 41% reduction needed	FAIL 34% reduction needed
R. Thurne Martham Broad	18	R. Thurne Martham Broad AN-THR060	30	1.07	33	No data	FAIL 9% reduction needed	Unknown
Martham South Broad	19	Martham South Broad (R. Thurne) AN-THR061	30	1.07	33	1.11***	FAIL 9% reduction needed	FAIL 4% reduction needed
***TN data is the mean for May 2019 – March 2020								

Table 5 – Yare Broads and Marshes site attributes with water quality targets

Unit name	SSSI Unit	Monitoring point ID	WQ Target		WQ Monitoring Data ⁵		Compliance with target – Pass/Fail and % reduction needed to achieve the WQ Target	
			TP (µg/l)	TN (µg/l)	TP (µg/l)	TN (µg/l)	TP	TN
Surlingham Broad	11	No monitoring point	-	-	-	-	Unknown	Unknown
Rockland Broad	15	Rockland Broad Outflow (Short dike)	30	1.07	217****	7.65****	FAIL 86% reduction needed	FAIL 86% reduction needed

⁵ Water Quality Monitoring data from EA WIMS database. Nutrient concentrations reported are the 2019 annual mean for Total Phosphorus (TP) and Total Nitrogen (TN).

		AN-YAR31010						
Bargate Broad	24	No monitoring point	-	-	-	-	Unknown	Unknown
Wheatfen Broad	25	Wheatfen Broad AN-YAR305	30	1.07	326 *****	2.68 *****	FAIL 91% reduction needed	FAIL 60% reduction needed
Strumpshaw Broad	26	Strumpshaw Broad AN-YAR225	30	1.07	353 *****	2.47 *****	FAIL 92% reduction needed	FAIL 57% reduction needed
Buckingham Broad	27	No monitoring point	-	-	-	-	Unknown	Unknown
Hassingham Broad	28	No monitoring point	-	-	-	-	Unknown	Unknown
<p>**** Jan – Dec 2019</p> <p>***** Feb – Dec 2017</p> <p>***** May – Dec 2017</p>								

The condition of the waterbody and the habitats which support the designated features is in part dependent on the water quality within them. Where excessive nutrients are present in a system this can lead to the occurrence of eutrophication, impacting on aquatic macrophyte flora and changes in water chemistry.

Recent Water Quality data shows Ant Broads and Marshes, Bure Broads and Marshes, Trinity Broads SSSI, Upper Thurne Broads and Marshes and Yare Broads and Marshes are exceeding (overall) the targets for Total Phosphorus and Total Nitrogen. Within these areas four units are achieving the target for Total Nitrogen (TN): Cockshoot Broad, Filby Broad, Ormesby Little Broad and Rollesby Broad Sailing Club.

The water quality targets for the water bodies are also required for the water input into the wetland habitats and dyke features to avoid changes in species composition and the loss of characteristic and sensitive species.

4. Additional Information

Habitat Type impacted by nutrients – Standing Water.

The Broads SAC and Broadland Ramsar are underpinned by multiple SSSIs. The component SSSIs being considered here include:

- Ant Broads and Marshes
- Bure Broads and Marshes
- Trinity Broads
- Upper Thurne
- Yare Broads and Marshes

SSSI interest features include:

Ant Broads and Marshes SSSI

- Assemblages of breeding birds - Lowland open waters and their margins
- Ditches
- Eutrophic lakes
- Floodplain fen (lowland)
- Invert. assemblage W211 open water on disturbed sediments
- Invert. assemblage W313 moss & tussock fen
- Invert. assemblage W314 reed-fen & pools
- Lowland mire grassland and rush pasture
- Ponds
- Population of Schedule 8 plant - *Liparis loeselii*, Fen Orchid
- Vascular plant assemblage
- Wet woodland

Bure Broads and Marshes SSSI

- Assemblages of breeding birds - Lowland fen without open water
- Eutrophic lakes
- Floodplain fen (lowland)
- Invert. assemblage W126 seepage
- Invert. assemblage W211 open water on disturbed sediments
- Invert. assemblage W313 moss & tussock fen
- Invert. assemblage W314 reed-fen & pools
- Lowland mire grassland and rush pasture
- Vascular plant assemblage
- Wet woodland

Trinity Broads SSSI

- Aggregations of breeding birds - Marsh harrier, *Circus aeruginosus*

- Aggregations of breeding birds - Pochard, *Aythya ferina*
- Aggregations of breeding birds - Shoveler, *Anas clypeata*
- Aggregations of breeding birds - Tufted duck, *Aythya fuligula*
- Aggregations of non-breeding birds - Bittern, *Botaurus stellaris*
- Aggregations of non-breeding birds - Pochard, *Aythya ferina*
- Aggregations of non-breeding birds - Shoveler, *Anas clypeata*
- Aggregations of non-breeding birds - Tufted duck, *Aythya fuligula*
- Assemblages of breeding birds - Lowland open waters and their margins
- Floodplain fen (lowland)
- Lowland wetland including basin fen, valley fen, floodplain fen, waterfringe fen, spring/flush fen and raised bog lagg
- Mesotrophic lakes
- Otter, *Lutra lutra*
- Vascular plant assemblage
- Wet woodland

Upper Thurne Broads and Marshes SSSI

- Aggregations of breeding birds - Avocet, *Recurvirostra avosetta*
- Aggregations of breeding birds - Bearded tit, *Panurus biarmicus*
- Aggregations of breeding birds - Bittern, *Botaurus stellaris*
- Aggregations of breeding birds - Marsh harrier, *Circus aeruginosus*
- Aggregations of breeding birds - Pochard, *Aythya ferina*
- Aggregations of non-breeding birds - Bewick's swan, *Cygnus columbianus bewickii*
- Aggregations of non-breeding birds - Gadwall, *Anas strepera*
- Aggregations of non-breeding birds - Shoveler, *Anas clypeata*
- Aggregations of non-breeding birds - Teal, *Anas crecca*
- Assemblages of breeding birds - variety of species
- Charophyte assemblage
- Ditches
- Floodplain fen (lowland)
- Invert. assemblage W314 reed-fen & pools
- Lowland mire grassland and rush pasture
- Mesotrophic lakes
- Nationally scarce plant - *Potamogeton coloratus*, Fen Pondweed
- Nationally scarce plant - *Thelypteris palustris*, Marsh Fern
- Nationally scarce plant - *Thyselium palustre*, Milk-parsley
- Vascular plant assemblage
- Wet woodland

Yare Broads and Marshes SSSI

- Aggregations of breeding birds - Cetti's warbler, *Cettia cetti*
- Aggregations of breeding birds - Gadwall, *Anas strepera*
- Aggregations of breeding birds - Marsh harrier, *Circus aeruginosus*

- Aggregations of non-breeding birds - Bean goose, *Anser fabalis*
- Aggregations of non-breeding birds - Hen harrier, *Circus cyaneus*
- Aggregations of non-breeding birds - Wigeon, *Anas penelope*
- Assemblages of breeding birds - Lowland open waters and their margins
- Ditches
- Eutrophic lakes
- Floodplain fen (lowland)
- Invert. assemblage W313 moss & tussock fen
- Invert. assemblage W314 reed-fen & pools
- Lowland mire grassland and rush pasture
- Vascular plant assemblage
- Wet woodland

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Table 2 – Bure Broads and Marshes site attributes with water quality targets

Table 3 – Trinity Broads SSSI site attributes with water quality targets

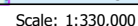
Table 4 – Upper Thurne Broads and Marshes site attributes with water quality targets

Table 5 – Yare Broads and Marshes site attributes with water quality targets

Appendix

Component SSSIs of The Broads SAC

Map of the component SSSIs of The Broads SAC



List of abbreviations

SAC – Special Area of Conservation

SSSI – Site of Special Scientific Interest

TN – Total Nitrogen

TP – Total Phosphorus

UNESCO – United Nations Educational, Scientific and Cultural Organisation

WQ – Water Quality

Glossary

Ramsar – A Ramsar site is a wetland site designated to be of international importance under the Ramsar Convention, also known as the ‘The Convention on Wetlands’, an intergovernmental environmental treaty established in 1971 by UNESCO

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