

Site name: River Dee (England) **County:** Cheshire/ Shropshire

District: Chester City Council District Council/ North Shropshire District Council

Status: Site of Special Scientific Interest (SSSI) notified under section 28C of the Wildlife and Countryside Act 1981 (as amended)

Local Planning Authorities: Cheshire County Council, Shropshire County Council, Chester City Council District Council, North Shropshire District Council

National Grid reference: SJ417532

Area: 371.50 ha

Ordnance Survey sheet: 1:50,000: 117, 126 **1:10,000:** SJ23, 26, 33, 34, 44, 45, 46

Date notified (under 1981 Act): 1996

Date of Last Revision: 2 May 2002

Reasons for notification:

The River Dee is notified for its nationally important transition through a range of river types from mesotrophic to eutrophic. It is also notified for Atlantic salmon *Salmo salar*, otter *Lutra lutra*, club-tailed dragonfly *Gomphus vulgatissimus* and fluvial geomorphology.

The River Dee lies within both England and Wales, and is notified as separate SSSIs – the River Dee (England) and the Afon Dyfrdwy-River Dee SSSI in Wales. The features for which the two SSSIs are notified, in particular the range of river types and migratory fish, depend upon the whole river ecosystem. The fluvial geomorphological interest occurs in both England and Wales.

The English sections of the river are therefore notified as components of the whole ecosystem for which the river is a nationally important example, and because the otter, club-tailed dragonfly and the geomorphological interest occurs on the English reaches.

General description:

The River Dee (England) SSSI comprises the part of the river of the same name and the part of its tributary, the Ceiriog, that flow through England. The site includes a section of the river as it meanders across the Cheshire plain down stream from Shocklach, where it forms the national boundary, northwards through Chester to the city's western outskirts. Further up the catchment, the southern half of river channel

of the River Ceiriog located in North Shropshire between Chirk Castle and Erbistock forms part of the SSSI.

The Afon Dyfrdwy-River Dee SSSI has its source in Snowdonia at the outflow of Llyn Tegid SSSI and it includes the Ceiriog, Meloch, Tryweryn and Mynach tributaries. Its catchment contains a wide spectrum of landscape from high mountains around Bala, rugged peaks near Llangollen, steep sided wooded valleys, and the plains of Cheshire and North Shropshire through to the vast mudflats of the estuary. There is a tidal influence as far upstream as Farndon and high tides regularly exceed the Chester weir crest level. It flows through broad valley near Corwen, and through the spectacular Vale of Llangollen before meandering northwards through parts of the Cheshire plain where it joins the River Dee (England) SSSI. Further downstream it includes the stretch below Chester to where the river meets the Dee Estuary.

The River Dee is reputed to be the most regulated river in Europe, with flow controlled by the reservoirs of Tegid, Celyn and Brenig.

Flora

The River Dee (England) is typical of a mesotrophic river. The aquatic plant community includes species of water crowfoot *Ranunculus fluitans x aquatilis* and *Ranunculus peltatus*, and also floating water plantain *Luronium natans*. Water crowfoot forms extensive beds along the whole length of the Dee where flow conditions are suitable. Other aquatic plants which occur within the site include intermediate water-starwort *Callitriche hamulata*, alternate-flowered water-milfoil *Myriophyllum alterniflorum* and bryophytes including *Rhynchostegium riparoides* and *Fontinalis antipyretica*. Marginal vegetation consists mainly of reed canary-grass *Phalaris arundinacea* with occasional branched bur-reed *Sparganium erectum*.

Downstream of Llangollen to Bangor-on-Dee the river shows signs of nutrient enrichment with Canadian waterweed *Elodea canadensis* becoming more prevalent. Below Bangor-on-Dee the River Dee (England) flows into the Cheshire plains and displays typical characteristics of lowland river types with shallow gradients and rich geology, with curled pondweed *Potamogeton crispus* and fennel pondweed *Potamogeton pectinatus* occurring frequently.

There is good tree cover along the banks of the River Dee and the tributaries, with the Ceiriog being tree lined on both banks along much of its length. The dominant species are alder *Alnus glutinosa* and willow *Salix* spp., with occasional ash *Fraxinus excelsior* and oak *Quercus* spp.. Where sections of the riverbank have been fenced off the vegetation tends to be dominated by bramble *Rubus fruticosus*, nettles *Urtica dioica* and other tall ruderals. Himalayan balsam *Impatiens glandulifera* and Japanese knotweed *Fallopia japonica* are increasing throughout the site.

Mammals

The otter *Lutra lutra* is well established throughout the river system, especially where appropriate bank side cover exists. Numbers have increased along the River Dee (England) in recent years, and there is a record of young being seen in 2000. Water vole *Arvicola terrestris* have been recorded on the middle and lower reaches of the River Dee.

Fish

The River Dee is recognised as one of North Wales' premier rivers for Atlantic salmon *Salmo salar*. The Mynach, Meloch and Ceiriog tributaries are the most important salmon spawning tributaries in the Dee catchment and are included in the Afon Dyfrdwy-River Dee SSSI and also in relation to the English part of Ceiriog in the River Dee (England). Other migratory fish utilising the river system include sea trout *Salmo trutta trutta*, eel *Anguilla anguilla*, river lamprey *Lampetra fluviatilis*, and sea lamprey *Petromyzon marinus*. Smelt *Osmerus eperlanus* and twaite shad *Alosa fallax* have been recorded in the section between Chester and the estuary.

The Dee also supports important populations of non-migratory fish including brown trout *Salmo trutta*, bullhead *Cottus gobio*, and brook lamprey *Lampetra planeri*. The middle and lower reaches of the Dee support a diverse coarse fish population. The river is noted for its grayling *Thymallus thymallus*

Birds

The entire River Dee system and associated tributaries support a wide range of breeding birds, which utilise a variety of bankside habitats. Nesting habitat for the kingfisher *Alcedo atthis* and sand martin *Riparia riparia* is provided by active erosion of riverbanks. Areas of fast flowing water and bankside cover are favoured by the dipper *Cinclus cinclus* and grey wagtail *Motacilla cinerea*, whereas the yellow wagtail *Motacilla flava* and mute swan *Cygnus olor* are found along the slower flowing reaches. Populations of grey heron *Ardea cinerea*, common sandpiper *Actitis hypoleucos* and goosander *Mergus merganser* also occur on the River Dee.

Areas of the Lower Dee floodplains provide breeding grounds for waders such as the lapwing *Vanellus vanellus*, and, when flooded, provide important over-wintering sites for the pintail *Anas acuta*.

Invertebrates

The club-tailed dragonfly *Gomphus vulgatissimus* is nationally scarce and present along the lower Dee including several parts of the River Dee (England), particularly where the river is slow flowing and there is adjacent woodland habitat or bankside tree cover available for adults. This population is the most northerly in Britain and the only one within the Cheshire Area of Search.

The lower reaches of the River Dee support Britain's only known population of the stonefly *Isogenus nubecula*, which is classified as vulnerable in the Red Data Book. The nationally scarce weevil *Baris lepidii* has been recorded on sandy riverbanks along the lower Dee but has not been recorded on any other Welsh river.

Geology/Geomorphology

The River Dee Holt to Worthenbury Geological Conservation Review (GCR), previously notified as an SSSI, straddles the border and is partly located within the River Dee (England) SSSI and the Afon Dyfrdwy-River Dee SSSI.

Holt to Worthenbury (Fluvial Geomorphology)

This area of interest comprises a meandering reach of the River Dee between Holt in the north and Worthenbury in the south. It includes land in Wrexham (Wales) and Cheshire (England) and consists of some of the most spectacular and intricately developed river bends or meanders seen anywhere in Britain. The area is of national importance for studies of fluvial geomorphology.

The main features of interest within the area are: 1) the present river channel and its intricate pattern of meanders; 2) the main areas of floodplain either side of the river, for the full length of the selected reach; 3) all the visible palaeochannels (abandoned channels) located on the floodplain adjacent to the present channel; 4) the gravel and sand bars located within the modern channel and the other evidence of modern-day river processes contained within the channel; and 5) the most impressive of the remnants of ancient cliffs located towards the north-east and south-west margins of the site.

The scientific value of the site can be summarised as follows: First, the pattern and scale of the meanders are exceptional on a British scale: the range of forms from simple curves to double-headed forms, and the intricacy of the pattern developed over the whole reach is outstanding.

Second, the total landform assemblage, including the remnants of ancient river cliffs, the floodplain areas, and the present and abandoned channels, provides the basis for reconstructing the development of the river since the end of the last glaciation. Third, the abandoned channels and old meander loops (some of which were once oxbow lakes) are exceptional landforms in their own right; their pattern, location and contained sediments provide significant potential for reconstructing some of the geologically recent changes in the course of the River Dee in its long evolution during Holocene times, i.e. the last 11,500 years. Fourth, the gravel and sand bars distributed along the course of the modern channel, and the changing form of its banks and bed, bear witness to a range of important modern-day fluvial processes.

Although this part of the course of the River Dee has changed in position markedly during the Holocene, the last few hundred years have been characterised by relative channel stability. It seems likely that the banks and bed of the modern channel are now evolving in response to changing flow and sediment regimes induced by upstream regulation and other human modifications to the fluvial system. The significance of the site for studying modern-day river processes is enhanced by the tidally-influenced downstream reach. This renders the area potentially significant for investigating the effects of possible future sea-level rise on the development of the river channel, particularly in view of the long history of tidal influence and stage records (river level) at downstream locations.

This reach of the Dee is therefore of major scientific importance and, as such, is a valuable part of the heritage of Great Britain. Its national importance stems from its outstanding combination of landform, sedimentary and process evidence. Most large British rivers have been significantly channelised or straightened in their lower reaches. The Dee is exceptional in maintaining an extremely sinuous planform across the sensitive fluvial-tidal transition zone.

Other information:

The River Dee (England) abuts Afon Dyfrdwy-River Dee SSSI

The Afon Dyfrdwy-River Dee proposed SAC abuts onto the Dee Estuary SAC.

The River Dee (England) SSSI in association with the Afon Dyfrdwy-River Dee SSSI supports the following habitats and species listed in the EC Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora. Those marked with an asterisk occur within England:

Floating vegetation of *Ranunculus* of plane, sub-mountainous rivers – Annex I

Otter *Lutra lutra** - Annex II & IV

Sea Lamprey *Petromyzon marinus** - Annex II

River Lamprey *Lampetra fluviatilis** - Annex II & V

Brook lamprey *Lampetra planeri** - Annex II

Atlantic salmon *Salmo salar** - Annex II & V

Bullhead *Cottus gobio** - Annex II

Freshwater Pearl Mussel *Margaritifera margaritifera* – Annex II & V

Grayling *Thymallus thymallus* – Annex V

The otter *Lutra lutra* and the Freshwater Pearl Mussel *Margaritifera margaritifera* are listed under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended).

Parts of this site have been selected as a result of the former Nature Conservancy Council's Geological Conservation Review (GREGORY, K.J. 1997. *Fluvial Geomorphology of Great Britain*. Geological Conservation Review Series No. 13., Chapman & Hall), a national survey and evaluation of sites of geological and geomorphological interest.

The River Dee (England) lies within the Meres and Mosses and Oswestry Uplands Natural Areas.