

County: Hampshire **Site Name:** River Test

Status: Site of Special Scientific Interest (SSSI) notified under Section 28 of the Wildlife and Countryside Act, 1981 (as amended 1985), Section 17 of the Water Resources Act, 1991 and Section 4 of the Water Industry Act, 1991.

Environment Agency Region: Southern

Water Company: Southern Water plc

Local Planning Authority: Hampshire County Council, Basingstoke & Dean Borough Council, Test Valley Borough Council, New Forest District Council

National Grid Reference: SU 533498 to
SU 367150
and SU 361145

Ordnance Survey Sheet 1:50,000: 185, 196

Length of River SSSI: Approx. 50 km

Area: 442.93 (ha)

Date Notified (Under 1981 Act and 1991 Acts): 10 June 1996

Confirmed: 20 February 1997

Other Information:

New site; parts of the site are already separately notified as parts of Bere Mill Meadows, Bransbury Common, Chilbolton Common, East Aston Common, Lower Test Valley and Stockbridge Common Marsh SSSIs.

Description and Reasons for Notification:

Key Features and General Character:

The River Test is a classic chalk stream. It is one of the most species-rich lowland rivers in England. The bulk of the system drains Cretaceous Chalk, with the lowermost reaches passing over a variety of geological strata. More recent deposits are common in the valley bottom throughout the system. The Test is a longer and larger river than the neighbouring Itchen, showing a greater downstream succession of species in consequence. Nevertheless, the entire river system exhibits a flora characteristic of chalk streams. In the lower reaches, additional species, more commonly found in other river types, add diversity to the assemblage. The Test supports a high diversity of invertebrate species, and is especially rich in aquatic molluscs.

Apart from the very short winterbourne section, substrate and flow regime combine to produce a fairly uniform pattern and gradual succession of habitats down the river. Shallows with gravel bottoms are a major habitat in the upper river while open stretches with deeper water are more common in the lower reaches. The water is naturally base-rich and of great clarity, but like many lowland rivers shows evidence of nutrient enrichment.

The river has been modified over the centuries by the construction of sluice systems and creation of channels for water meadows, water mills and navigation. Many stretches have also been realigned for such purposes and some deepened for land drainage. This has resulted in a multiplicity of water courses, though as a chalk river it would naturally have a braided channel. The Test is world renowned for game fishing, which is largely provided by brown trout, both wild and stocked populations, and to a lesser extent salmon and sea trout. For many years the river's channels, banks and vegetation have received regular management and alterations, to

maintain, improve and facilitate the fishing. All these activities have variously contributed to its present character and appearance.

The river's water is abstracted for public and agricultural use from boreholes as well as from its channel, which also receives discharges from sewage treatment works and a paper factory. There are commercial water-cress farms near the headwaters of the Test, and on certain tributaries it is a substantial industry. There are nine fish farms producing trout for human consumption utilising the waters of the Test, the largest are located on the lower half of the river. Also, smaller trout rearing and holding facilities are a part of many of the fisheries. Traditional water meadow management fell into disuse during this century and their unimproved flood pasture swards, together with the swamp and fen vegetation which developed on them, are still present in those meadows which have not been converted for modern intensive grassland or arable production. Areas of riparian vegetation including reed fen and wet woodland are a frequent feature in the upper half of the Test Valley, and at Leckford are particularly extensive and well developed. From Stockbridge Common downstream, until the marshes of the Lower Test Valley Nature Reserve at the river's mouth, such habitats tend to be localised.

Flora:

The Test is more species rich than most other lowland rivers, with the most diverse communities being found in the lower reaches where the substrate is more varied. Over 100 species of flowering plant, moss and liverwort have been recorded along its channel and banks. There are distinct successional changes on passing downstream. In the upper river where velocity is fastest and substrate coarsest, lesser water-parsnip *Berula erecta* and brook water-crowfoot *Ranunculus penicillatus* var. *pseudofluitans* predominate in the classic small chalk stream community. *Ranunculus* is abundant, if not dominant, throughout most of the rest of the river where flow and substrate conditions suit it, together with its main associates, blunt-flowered water-starwort *Callitriche obtusangula* and fools water cress *Apium nodiflorum*. This predominance of *Ranunculus* is one of the objectives of the fisheries' management. In the larger, more silty channels the vegetation is more diverse, with additional chalk stream species such as mare's-tail *Hippuris vulgaris*, opposite-leaved pondweed *Groenlandia densa*, the nationally-scarce river water-dropwort *Oenanthe fluviatilis* and horned pondweed *Zannichellia palustris*. Species typical of slower water are also common: common club-rush *Scirpus lacustris*, shining pondweed *Potamogeton lucens* and Canadian pondweed *Elodea canadensis*. Extensive growths of blanket weed *Cladophora* have occurred in recent low flow years, an indicator of increased eutrophication. Ivy-leaved duckweed *Lemna trisulca*, although not abundant, is a species of chalk rivers only.

The stable river margins have several characteristic species, amongst which lesser pond sedge *Carex acutiformis*, reed canary-grass *Phalaris arundinacea* and reed sweet-grass *Glyceria maxima* are abundant throughout the river. Tall perennials such as greater willowherb *Epilobium hirsutum*, meadowsweet *Filipendula ulmaria*, purple loosestrife *Stachys palustris*, yellow loosestrife *Lysimachia vulgaris* and orange balsam *Impatiens capensis* (an introduced species) are also widespread. Amongst the more localised and infrequent river bank species are skullcap *Scutellaria galericulata* and meadow rue *Thalictrum flavum*. Low growing water edge plants such as watercress *Rorippa nasturtium-aquaticum*, water mint *Mentha aquatica*, water forget-me-not *Myosotis scorpioides* and water speedwell *Veronica anagallis-aquatica* often carpet the base of the bank and river margins, and the emergent branched bur-reed *Sparganium erectum* is frequent. Another feature of the Test is the number of plant species which may be regarded as relics of a wetland flora adjacent to the river and now indicate the wetter stretches of river bank. These include water dock *Rumex hydrolapathum*, greater tussock-sedge *Carex paniculata*, common reed *Phragmites australis*, marsh marigold *Caltha palustris* and bulrush

Typha latifolia. The vegetation of drier banks, where the ground rises higher above the river, or has been made up to be so, usually support a greater proportion of coarse grasses and ruderal herbs with false oat grass *Arrhenatherum elatius* and common nettle *Urtica dioica* often in abundance. Trees are an important feature along the river, the roots of alder *Alnus glutinosa* and willows (usually crack willow *Salix fragilis* and sallow *S. cinerea*) bind the banks and provide refuges for river animals such as otter.

The site includes former water meadows, fen pasture and rush pasture communities of botanical interest. Soils in the valley derive from alluvium, peat and 'tufa' (calcareous marl). These, combined with the meadows' networks of ridges and drains, result in complex mosaics of dry grassland, rush pasture, fen-meadow, flood pasture and swamp communities. The floristic diversity of these unimproved meadows is high and species-rich communities typical of wet, calcareous, pastures are well represented. Proximity to the river and its carriers maintains the high ground-water levels which are important for the botanical diversity and interest, as are appropriate levels of grazing. Where present, the transitions these wet grasslands can have with the bank vegetation of water courses and other riparian vegetation in the valley are an important component of the habitat diversity.

The fen meadow and flood pasture communities can be considered characteristic of these former water meadows with moist calcareous soils and are the ones of highest botanical interest. The fen-meadow community is typically rich in plant species but is also very variable in its composition and structure, the differences usually due to environmental and management factors such as grazing and mowing. It forms one of the main elements of interest in most of the meadows in the site. Blunt-flowered rush is usually a prominent feature of this type of fen-meadow where it occurs elsewhere in Britain but in the Test Valley site it is largely localised or absent. Some of the community's typical species are often abundant in these meadows. Amongst the most constant species are 'general' grassland ones: creeping bent *Agrostis stolonifera*, red fescue *Festuca rubra*, Yorkshire fog *Holcus lanatus*, common mouse-ear *Cerastium fontanum*, jointed rush *Juncus articulatus*, meadow vetchling *Lathyrus pratensis* and red clover *Trifolium pratense*. Other prominent associates represent the fen character of the community: water mint *Mentha aquatica*, fen bedstraw *Galium uliginosum*, marsh bedstraw *G. palustre*, greater bird's-foot trefoil *Lotus uliginosus*, marsh horsetail *Equisetum palustre*, wild angelica *Angelica sylvestris*, common fleabane *Pulicaria dysenterica*, ragged robin *Lychnis flos-cuculi* and meadowsweet *Filipendula ulmaria*.

The flood pasture community does not often occupy extensive areas. Usually lying in the transition from dry grassland to wet drain or on lower lying ground alongside the river, it is also rich in species with abundant short sedges and localised carpets of mosses (mostly *Calliergon cuspidatum*). Many of the flood pasture's typical species also feature in the fen meadow community and its distinguishing elements include prominent marsh marigold *Caltha palustris*, water avens *Geum rivale*, meadow buttercup *Ranunculus acris*, carnation sedge *Carex panicea* and brown sedge *Carex disticha*, together with crested dog's tail *Cynosurus cristatus*, common sorrel *Rumex acetosa*, ribwort plantain *Plantago lanceolata* and common spike-rush *Eleocharis palustris*. The mown fishing paths are often former parts of the adjoining meadows, and can sometimes retain elements the flood pasture community, whilst it has been lost from the agriculturally improved fields.

In the meadows' diverse flora, species of particular note for being strongly associated with unimproved grassland are: adder's tongue *Ophioglossum vulgatum*, betony *Stachys officinalis*, bogbean *Menyanthes trifoliata*, common sedge *Carex nigra*, distant sedge *C. distans*, devil's-bit scabious *Succisa pratensis*, marsh arrowgrass *Triglochin palustre*, marsh lousewort *Pedicularis palustris*, marsh pennywort *Hydrocotyle vulgaris*, marsh valerian *Valeriana dioica*, meadow

red *Thalictrum flavum*, pepper saxifrage *Silaum silaus*, purple moor-grass *Molinia caerulea*, southern marsh orchid *Dactylorhiza praetermissa* and quaking grass *Briza media*.

The species usually dominating the fen and swamp communities of the drain's reed sweet-grass *Glyceria maxima*, lesser pond sedge *Carex acutiformis* and reed canary-grass *Phalaris arundinacea* can be widespread in the meadows and occur in the other communities. The thick tall vegetation of the drains can also include gipsywort *Lycopus europaeus*, marsh thistle *Cirsium palustre*, common valerian *Valeriana officinalis* and meadowsweet, and in places greater tussock-sedge *Carex paniculata* swamp has developed, especially around springs. Rush pasture, dominated by hard rush *Juncus inflexus* and jointed rush *J. articulatus*, also occurs in parts of the meadows and more extensively in those alongside the river at Romsey.

Grazing and mowing maintains the structure and diversity of the unimproved swards, and along certain drains and stretches of river-bank, cattle grazing also creates and maintains particular habitat conditions on which quite specialised invertebrates depend.

Tall riparian vegetation with willows and scrub (including hawthorn *Crataegus monogyna*, guelder rose *Viburnum opulus* and elder *Sambucus nigra*) is a particular feature along many stretches of the river channels. Sometimes separated from the bank by fishing paths it is generally dry, elsewhere it is a continuation of a swampy river margin with beds of common reed and other tall emergents. Though comprising many of the plant species featuring in parts of the grazed meadows and open river banks, these areas provide valuable habitat for wetland birds and invertebrates such as moths, beetles, spiders and the adult phases of mayflies and other 'fisherman's flies'. Wet woodland is also an important component of the river valley, similarly providing particular habitat conditions for its dependent fauna. Alder and willows are usually the main species, together with ash *Fraxinus excelsior*, oak *Quercus robur* and occasionally birch *Betula pubescens*. The woodland is often 'secondary' having developed from the more open vegetation, and usually retains many of its plant species. Where the woodland has long been established a more distinct flora can be present. One small area of wet alder woodland at a location which has had a long continuity of wooded cover, supports a very varied flora with quite numerous twayblade *Listera ovata* and herb Paris *Paris quadrifolia*, an uncommon and localised species.

Invertebrates

Over 232 invertebrate taxa (species and groups of species) have been recorded from the River Test. The main groups represented are Oligochaete worms, Crustaceans (e.g. the very abundant shrimp *Gammarus pulex*), Diptera (flies) and Neuroptera (alderflies, lacewings etc.) Ephemeroptera (mayflies) are a major element of the fauna with 21 species from 6 families represented. Reflecting the highly productive nature of the chalk stream environment, maximum numbers of individuals of each of the main groups may reach 4,000/m². The river is exceptionally rich in aquatic molluscs, with two national rarities (RDB* see note) reported: *Valvata macrostoma* (RDB2) and *Pisidium tenuilineatum* (RDB3). The former is a calcicole snail living in still or slow-flowing water amongst abundant submerged vegetation, the latter is a pea mussel also preferring still or slow flowing conditions. Some of the molluscs reported have localised distributions e.g. *Gyraulus albus*, *Valvata piscinalis*, *Bithynia leachi* and *Theodoxus fluviatilis*. Also worthy of mention amongst the exceptionally rich aquatic fauna are: *Niphargus aquilex*, an eyeless freshwater shrimp of calcareous springs, *Atrichops crassipes* a Rhagionid fly (RDB3), the nationally scarce riffle beetles *Oulimnius troglodytes*, *Riolus cupreus* and *R. subviolaceus*, and the alderfly *Sialis nigripes* which is mainly northern and western in distribution. Many of the nineteen species of mayfly noted are local in distribution. Other species of nationally scarce status reported from the Test include two species of caddisfly *Ylodes conspersus* and *Metalype fragilis*, and the mayfly *Baetis atrebatinus*.

Recording of invertebrates has been carried out on the Leckford Abbas Estate section of the valley since the 1940s at the instigation of its owner John Spedan Lewis. A unique record of the invertebrate fauna of the riparian habitats has been built up, and though some records are now dated, it is considered a particularly important site for three groups of fly and the *Aculeate* family of *Hymenoptera* (bees and wasps). The records reveal an exceptional species richness which includes numerous nationally rare and scarce species, and demonstrate the quality, as invertebrate habitat, that the river's riparian vegetation can have.

Amongst the nationally rare species recorded from areas of the river's riparian vegetation is *Cosmetopus dentimanus* (RDB1) a "dung" fly that has only been recorded twice in Britain, at Leckford and in the Lower Itchen Valley. Others include the Empidid flies *Syneches muscarius* (pRDB2) and *Platypalpus infectus* (pRDB3) and *Endothenia pullana* (pRDB3) a moth whose larvae feed on the roots of marsh woundwort. Two very rare craneflies are reported from shaded river margins: *Gonamyia abbreviata* (pRDB3) and *Arctoconopa melanopodia* (pRDB2). The Southern damselfly *Coenagrion mercuriale* (RDB3) and Desmoulin's whorl snail *Vertigo moulinsiana* (RDB3), both species considered of European Interest and listed in Annex II of the 'Habitats and Species' Directive, have also been recorded in the site. There are many records of nationally scarce invertebrates from the valley, and examples of those species dependent on the wetland vegetation include the reed dagger *Simyra albovenosa* a moth whose larvae feed on common reed, the scarlet tiger *Callimorpha dominula* a moth whose larvae feed on comfrey, *Tetanocera phyllophora* a snail-killing fly and *Chrysolina menthastri* a bright green beetle which lives on water mint.

Birds

The Test and its adjoining vegetation provides valuable habitat for wetland birds. The diverse range of characteristic riverine species breeding in the site includes almost ubiquitous kingfisher *Alcedo atthis*, grey wagtail *Motacilla cinerea* and little grebe *Tachybaptus ruficollis*. In the dense vegetation along its margins coot *Fulica atra* and moorhen *Gallinula chloropus* are frequent and tufted duck *Aythya fuligula*, pochard *A. ferina* and mute swan *Cygnus olor* also nest. Sedge warbler *Acrocephalus schoenobaenus* and reed warbler *A. scirpaceus* can be numerous in the tall vegetation with scattered scrub along the water courses. In this same habitat, the formerly rare Cetti's warbler *Cettia cettia* is becoming widely established whilst the grasshopper warbler *Locustella naevia* has become quite scarce. Water rail *Rallus aquaticus*, though seldom seen, also breed in the dense wetland vegetation. Numbers of wet-grassland breeding birds of the Test Valley such as snipe *Gallinago gallinago*, redshank *Tringa totanus* and lapwing *Vanellus vanellus*, have all undergone declines in recent years, and few breed in the site. Passage species using the river's margins include common sandpiper *Actitis hypoleucos* and green sandpiper *Tringa ochropus*. Kingfisher and grey heron *Ardea cinerea* are the river's resident and most commonly seen fish-eating birds, although cormorant *Phalacrocorax carbo* now increasingly also range along the river and bittern *Botaurus stellaris* uses the river margins and reed beds on passage and in winter.

Fish

The Test has developed a very important recreational game fishery. Almost the entire river is managed to maintain and facilitate fishing for trout (brown and rainbow), with fishing for sea trout, salmon and coarse fish also taking place along the lower reaches. Pike and other coarse fish are regularly removed along most of the river, but still maintain a presence. In its range of species, the fish fauna of the Test is typical of lowland chalk-rivers, though the community has been modified by introductions of rainbow trout, grayling and hatchery-reared brown trout, and the removal of other species. In the uppermost reaches of the Test system native populations of brown trout *Salmo trutta* are believed to persist, and strong populations of bullhead *Cottius gobbo* and brook lamprey *Lampetra planeri* are notable elements of the natural fish fauna. The

river's runs of salmon *Salmo salar* fluctuate markedly. Numbers have shown a steady decline since the 1960s which has increased sharply since the late 1980s, giving cause for much concern and efforts to remedy the situation. The increased silt loads in the river and their deposition on the river bed gravels, adversely affecting salmonid spawning, is one of the causes implicated in this decline. The remedial measures undertaken have entailed river channel habitat management and the release of large numbers of young hatchery-reared fish.

Mammals

Otters *Lutra lutra* have been reported from certain parts of the site, but the Test no longer has an established population. Water voles *Arvicola terrestris* are common in places, but their numbers are thought to have declined as has been noted elsewhere in Britain.

Notes:

* Red Data Book (RDB) identifies the status of Britain's rarest invertebrate species: RDB1 = Endangered; RDB2 = Vulnerable; RDB3 = Rare; (pRDB = proposed status).