Designated Site Name:	River Itchen SAC

Site Details:

From River Itchen SAC Citation:

The Itchen typifies the classic chalk river and shows a greater uniformity in physical characteristics along its entire length than other rivers of this type. Since the river is mainly spring fed, there is only a narrow range of seasonal variation in physical and chemical characteristics. The water is of high quality, being naturally base-rich and of great clarity; and its temperature is relatively constant, with dissolved oxygen levels at or near saturation.

The river's vegetation is dominated by higher plants, and the aquatic flora is exceptionally species rich with many of the typical chalk stream plants present in abundance. The majority of species are present throughout the system and downstream changes are less than in most other rivers. The river is rich in invertebrates and supports diverse populations of aquatic molluscs. The Itchen supports one of the few populations of the native freshwater crayfish remaining in the rivers of southern England and a population of otters.

The river is dominated throughout by aquatic *Ranunculus spp*. The headwaters contain pond water-crowfoot *Ranunculus peltatus*, while two Ranunculus species occur further downstream: stream water-crowfoot *R. penicillatus* ssp. *pseudofluitans*, a species especially characteristic of calcium-rich rivers, and river water-crowfoot *R. fluitans*.

The fish fauna of the Itchen is typical of lowland chalk rivers. Strong populations of bullhead *Cottus gobbio* and brook lamprey *Lampetra planeri* are notable elements of the natural fish fauna. The river provides extensive beds of submerged plants that act as a refuge for the species, and coarse sediments that are vital for spawning and juvenile development. The river's runs of Atlantic salmon *Salmo salar* fluctuate markedly. The upper and mid river provides much suitable habitat for otters. A localised population of Atlantic stream crayfish *Austropotamobius pallipes* remains in a headwater of the river.

The Itchen valley contains areas of fen, swamp and meadow supporting vegetation with diverse plant communities, some typically species-rich. Meadow ditches support strong populations of southern damselfly *Coenagrion mercuriale*. The numbers recorded place the site amongst the most important in Britain for this species.

Reason for European Site Designation:

The River Itchen Special Area for Conservation is designated for the following features:

- H3260 Water courses of plain to montane levels with *R. fluitantis*
- S1044 Southern damselfly, *Coenagrion mercuriale*
- S1092 Freshwater crayfish, *Austropotamobius pallipes*
- S1096 Brook lamprey, *Lampetra planeri*
- S1106 Atlantic salmon, *Salmo salar*
- S1163 Bullhead, *Cottus gobio*
- S1355 Otter, *Lutra lutra*

Links to Conservation Advice:
Conservation Objectives
Conservation Objectives Supplementary Advice

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

Phosphorus

Water Quality Evidence:

In the Conservation Objectives Supplementary Advice for the River Itchen SAC it states that 'the natural nutrient regime of the river should be protected, with any anthropogenic enrichment above natural/background concentrations limited to levels at which adverse effects on characteristic biodiversity are unlikely'.

Water Quality data is reported against the relevant SSSI units within the SAC.

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
			Soluble Reactive Phosphorus (ug/l), annual mean	Orthophosphate, reactive as P (ug/l), mean	Compliance with target – Pass/Fail and % reduction needed to achieve the WQ Target
Candover Brook	105	CANDOVER BROOK AT GRANNY GOSS NDMN SO-G0006858	20	21.0 (March 2019 – Feb 2022)	FAIL 9% reduction needed
		CANDOVER BROOK AT ABBOTSTONE NDMN SO-G0006856	20	21.8 (March 2019 – Feb 2022)	FAIL 8% reduction needed
		CANDOVER AT BOROUGH BRIDGE SO-G0003852	20	19.5 (Feb 2019 – Dec 2022)	PASS
Upper Itchen (Itchen Stoke to Easton)	106	RIVER ITCHEN AT ITCHEN STOKE SO-G0003810	30	26.5 (Feb 2019 – Jan 2022)	PASS
		RIVER ITCHEN AT EASTON SO-G0003806	30	36.3 (Jan 2019 – Dec 2021)	FAIL 17% reduction needed
Middle Itchen (Easton to Highbridge)	107	DOWNSTREAM HARESTOCK WWTW WATER LANE FOOTBRIDGE SO-G0004209	30	47 (Sept 2019 – Nov 2021)	FAIL 36% reduction needed
		RIVER ITCHEN AT ST CROSS BRIDGE SO-G0003795	30	42.8 (April 2019 – Jan 2022)	FAIL 30% reduction needed
		RIVER ITCHEN AT OTTERBOURNE MEMORIAL GARDEN SO-G0003796	30	42.9 (April 2019 – Jan 2022)	FAIL 30% reduction needed
Lower Itchen (Highbridge to Wood Mill)	108	RIVER ITCHEN AT BISHOPSTOKE SO-G0003793	30	40.3 (April 2019 – Dec 2021)	FAIL 26% reduction
		RIVER ITCHEN DOWNSTREAM OF EASTLEIGH SEWAGE	30	81.9 (Sept 2019 – Nov 2021)	FAIL 63% reduction needed

		TREATMENT WORKS SO-G0003792			
		RIVER ITCHEN AT GATERS MILL SO-G0003786	30	79.4 (Jan 2019- Dec 2021)	FAIL 62% reduction needed
River Arle	142	RIVER ALRE AT DROVE LANE SO-G0003858	40	36.8 (Jan 2019 – Jan 2022)	PASS
Cheriton Stream	143	SEVINGTON FARM TRACK NDMN RIVER ITCHEN SO-G0006868	20	31.6 (March 2017-Feb 2020)	FAIL 30% reduction needed
		VERNAL FARM BRIDGE NDMN RIVER ITCHEN SO-G0006869	20	26.1 (March 2017-Feb 2020)	FAIL 23% reduction needed
		RIVER ITCHEN (TICHBOURNE) AT SEWARDS BRIDGE SO-G0003814	20	24.5 (March 2019 – Dec 2021)	FAIL 18% reduction needed

[1]Water Quality Monitoring data from EA WIMS database. Orthophosphate (OP) is a reasonable approximation to Soluble Reaction Phosphorus (SRP). Any sample results below the level of detection were included at face values for the calculation of the mean. Following the rivers common standards monitoring guidance the mean of 3 years worth of data used where available (as stated in brackets).

The occurrence of excessive nutrients in the waterbody can impact on the competitive interactions between high plant species and between higher plant species and algae, which can result in a dominance in attached forms of algae, and a loss of characteristic plant species. Changes in plant growth and community composition and structure can have implications for the wider food web, and the species present. Increased nutrients and the occurrence of eutrophication can also impact on the dissolved oxygen levels in the waterbody and substrate conditions, also impacting on biota within the river.

Recent water quality measurements for the River Itchen within the SAC show phosphorus concentrations to be exceeding the targets in most units. Any nutrients entering the catchment upstream of the locations which are exceeding their nutrient targets, will make their way downstream and have the potential to further add to the current exceedance. For the River Itchen, although not all units within the catchment are exceeding the phosphorus targets, as the most downstream unit (unit 108) is failing then any phosphorus added within the whole Itchen catchment upstream will contribute to this. Hence the catchment map for the River Itchen includes the entire catchment.

Additional Information:

Habitat Type impacted by nutrients – Riverine

This site is also within the Solent catchment which is unfavourable for Nitrogen.

The River Itchen SAC is legally underpinned by the River Itchen - 2000227 SSSI.

SSSI features of interest include:

- Assemblages of breeding birds - Lowland open waters and their margins

- Atlantic salmon, *Salmo salar*
- Brook lamprey, *Lampetra planeri*
- Bullhead, *Cottus gobio*
- Floodplain fen (lowland)
- Invert. assemblage W125 slow-flowing rivers
- Invert. assemblage W314 reed-fen & pools
- Lowland meadows
- Lowland mire grassland and rush pasture
- Lowland mixed deciduous woodland
- Lowland neutral grassland (MG8)
- Lowland wet neutral grassland (MG11, MG13)
- Lowland wetland including basin fen, valley fen, floodplain fen, water fringe fen, spring/flush fen and raised bog lagg
- Nationally rare and scarce dragonfly species - *Coenagrion mercuriale*, Southern Damselfly
- Otter*, Lutra lutra*
- Rivers and Streams
- Upland neutral grassland (MG8)
- Water Vole, *Arvicola terrestris*
- Wet woodland
- White-clawed (or Atlantic stream) crayfish, *Austropotamobius pallipes*