Date Notified: 26 Nov 1986

County: Humberside and North Yorkshire **Site Name: Flamborough Head**

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

Local Planning Authority: East Yorkshire Borough Council, Scarborough Borough Council

National Grid Reference: TA 143764–1995682
(extremities of site)

Ordnance Survey Sheets 1:50,000: 101 **1:25,000:** TA 16, 17, 26, 27

Area: 224.1 (ha) 553.8 (ac) (E. Yorkshire)
91.1 (ha) 225.1 (ac) (Scarborough)
315.2 (ha) 778.9 (ac) (Total)

First Notified: 1952 * **Date of Revision:** 1986

Description:
The site comprises the coastal cliffs of Flamborough Head between Reighton and Sewerby, composed of chalk and softer sedimentary rocks. The cliff line exposes a variety of geological features and the chalk, which reaches 130 m at Bempton, has been eroded to form impressive stacks and caves between North Cliff and Castlemere Hole. These rock exposures are also of interest in supporting important breeding bird colonies, whilst the cliff tops support interesting plant communities.

The internationally important geological site has numerous features of interest within a rock sequence spanning the Upper Jurassic period, about 140 million years before the present (MYBP) to the top of the Cretaceous about 70 MYBP, overlain by Pleistocene deposits less than 1 million years old. The site is also important for studies of coastal geomorphology. It is particularly notable, as one of a suite of chalk coastlines, in being within the North Sea wave climate rather than subject to the Atlantic swell or English Channel wave climates, and as the only chalk site extensively overlain by glacial deposits.

Below Speeton Cliff, the exposure of Upper Jurassic Kimmeridge Clay is the only site in Yorkshire showing this portion of the geological column and the only site between Dorset and the Moray Firth showing the autissiodorensis-elegans zonal boundary. The Speeton Clay, which here forms the Lower Cretaceous sequence, rests uncomformably on middle Kimmeridge Clay; the sequence exposed here is unique in the British Isles, in that it exposes, in one section, marine strata spanning the time interval between the Upper Berriasian and the Barremian Stage. The Speeton Clay here contains a series of marine fossils, including diagnostic ammonite and belemnite fauna which make it possible to correlate these rocks with strata in western Europe and the USSR. The section here is of importance for the international correlation of Lower Cretaceous rocks, and this is one of Britain's most important stratigraphical localities. Above this is found the finest exposure in North East England of Red Chalk, deposited during the Albian stage at the end of the Lower Cretaceous.

The chalk cliffs on the headland are of Upper Cretaceous age and form the only coastal exposures in Britain exhibiting a complete sequence of the North Sea Basin deposits for this period (100–70 MYBP), comprising the Ferriby, Welton, Burnham and Flamborough Chalk

formations. This is of considerable importance in comparing and dating similar chalk deposits elsewhere, particularly the succession off-shore in the North Sea Basin. Particular features of the chalk are the rich lithistid sponge fauna at Sewerby Cliff and spectacular contortions of the bedding at Scale Nab resulting from later faulting.

A major feature of Pleistocene origin is the cross section of a cliff line and beach formed during the Ipswichian interglacial, about 100,000 years ago, which can be seen at Sewerby Rocks. This former marine beach has been dated by the fossil remains of mammals, including spotted hyena, hippopotamus and straight tusked elephant, which are found within it. A sequence of glacial tills, deposited during the following, Devensian, glaciation overlies this feature. These comprise the clays and gravels of the present Sewerby cliffs and also overlie the chalk cliffs of the headland. Speeton is also a classic Pleistocene site for the Speeton Shell Bed, a fossiliferous sequence of gravels, sands and silts containing a temperate estuarine assemblage of marine molluscs.

In geomorphological terms the northern cliffs are relatively simple, both in plan and profile, and feed small quantities of flint to their fringing beaches. Around Flamborough some excellent examples of caves, arches and stacks have been created, associated with faulting and jointing within the cliffs. Where overlying till has collapsed into caves intersecting the chalk-till junction a number of blow holes have developed. Shore platforms are well developed both in this area and along the southern shoreline where the beaches are mainly of sand or chalk pebbles, with few flints fed from the cliffs. The influence of marine processes varies around the headland and these southern cliffs are less actively eroded than those to the north.

The north facing cliffs support internationally important colonies of breeding seabirds with about 80,000 pairs of kittiwakes, 6,600 pairs of guillemots, 2,000 pairs of razorbill, 1,000 pairs of puffins and 830 pairs of fulmar, the largest colonies being found at Bempton and Breil Nook. Bempton Cliffs are particularly noted as the only mainland gannetry in the country, with a population of 370 pairs in 1984.

The cliff-top vegetation is characterised by both a maritime influence, and by the calcareous influence of the chalk underlying the surface boulder clay. Thus sea cliff species such as thrift *Armeria maritima* and sea plantain *Plantago maritima* grow alongside herbaceous species more typical of chalk grassland such as kidney vetch *Anthyllis vulneraria*. Where the undercliff has slipped and is flushed by calcareous run-off northern marsh-orchid *Dactylorhiza purpurella* and grass of Parnassus *Parnassia palustris* may be found, with saltmarsh species such as common saltmarsh-grass *Puccinellia maritima*, sea arrowgrass *Triglochin maritima* and sea-milkwort *Glaux maritima*. Common reed *Phragmites australis* with associated freshwater marsh species forms significant stands in flushed cliff areas.

Other Information:

1. The site was formerly known as ‘Speeton and Flamborough Coast SSSI’.

2. During the 1986 revision the boundary of the site has been amended both to include land not previously notified* and to exclude land previously notified*.

3. This site is listed under the name ‘Bempton/Speeton Cliffs’ in ‘A Nature Conservation Review’, edited by D A Ratcliffe (1977). Cambridge University Press.

4. Bempton Cliffs fulfils the criteria for designation under the terms of the European Community Directive 79/409/EEC on the Conservation of Wild Birds as a Special Protection Area,

5. The site is identified as being of international importance in the Geological Conservation Review, under the following Blocks:

Cenomanian – Maastrichtian	Coastal Geomorphology of England
Aptian – Albian	Pleistocene/Quaternary of E. England (North)
Vertebrate palaentology	
Berriasian – Barremian	Kimmeridgian

6. Part of the site is managed as a nature reserve by the Royal Society for the Protection of Birds.

7. The Headland is designated as Heritage Coast by the Countryside Commission.

* Under Section 23 of the National Parks and Access to the Countryside Act, 1949.