County: North Yorkshire **Site Name: Robin Hood's Bay: Maw Wyke to Beast Cliff**

District: Scarborough

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

Local Planning Authority: North York Moors National Park, North Yorkshire County Council, Scarborough Borough Council

National Grid Reference: NZ 941082 – TA 005987 **Area:** 365.25 hectares (ac)

Ordnance Survey Sheet 1:50,000: 94, 101 **1:10,000:** NZ 90 NE, NW, SE
SE 99 NE
TA 09 NW

First Notified: (under 1949 Act): parts notified between 1954–1974

Date Notified: (under 1981 Act): parts notified between 1984–1986

Notified as Robin Hood's Bay: Maw Wyke to Beast Cliff: 26 October 1999

Other Information:
Site formerly notified under the Wildlife and Countryside Act 1981 as Maw Wyke-Millers Nab SSSI, Beast Cliff-Millers Nab SSSI and Hawsker Bottoms SSSI.

A Geological Conservation Review (GCR) Site.

Beast Cliff is nationally important for its coastal/woodland vegetation (listed in "A Nature Conservation Review" edited by D A Ratcliffe (1977), Cambridge University Press).

Robin Hood's Bay: May Wyke to Beast Cliff is nationally important for its low intertidal habitats. Brazier and Holt 1998 – Marine Nature Conservation Review – Sector 5, southeast Scotland – North East England assessment. JNCC.

The site is within the North Yorkshire Heritage Coast and within the North York Moors National Park.

Description and Reasons for Notification:
This site consists of part of the North Yorkshire coast in the vicinity of Robin Hood's Bay, north of Scarborough, from Maw Wyke and Hawsker Bottoms at the northern end to Beast Cliff at the southern end. The site is of importance for five distinct areas of geological interest, the coastal/woodland vegetation at Beast Cliff and the zonation of marine biotopes on the rocky foreshore.

Geology:
The coastal cliffs and foreshore exposures around Robin Hood's Bay and Ravenscar constitute one of Britain's classic geological localities, and have been studied from at least the 1820s.

The site includes an unrivalled and continuously exposed Lower Jurassic sequence dominated by mudrocks of the Lias Group, and capped by sandstones of the Ravenscar Group of early Middle Jurassic age. Throughout the succession there is excellent bio- and chronostratigraphic

control based on a very detailed sequence of ammonite faunas. Many of these faunas form the basis for the formal definitions of Biohorizons, Subzone and Zones and the site is therefore of very great importance to European Jurassic chronostratigraphy. The area has also yielded the type specimens of the index species of many of these units.

The Lias Group, represented in ascending order by the Redcar Mudstone, Staithes, Cleveland Ironstone and Whitby Mudstone Formations contains stratotypes for several zones and horizons. This includes a very complete Sinemurian Pliensbachian boundary sequence within the Redcar Mudstone Formation, which may become a Global Stratotype Section and Point. Other highlights include a well preserved succession of biostratigraphical horizons within the Cleveland Ironstone and the most complete Toarcian succession in Britain represented by the Whitby Mudstone Formation.

This Lower Jurassic succession is also of great interest for its sedimentology and its fossil invertebrate faunas which both provide insights into the environmental conditions of the time. Occasional marine reptiles (ichthyosaurs and crocodiles) have been recovered from various levels.

The base of the Middle Jurassic sequence is well exposed around Blea Wyke and includes a relatively thick Dogger Formation with a famous and fossiliferous "Nerinea Bed" of Aalenian (Opalinum to Murchisonae Zone) age. The succeeding dominantly, non-marine Ravenscar Group is well developed including its component Saltwick, Eller Beck, Cloughton and Scarborough Formations (Aalenian to Lower Bajocian).

In the Beast Cliff area a number of plant bearing horizons occur within the Saltwick and Cloughton Formations. Many species occur which are seldom found at Yorkshire's other famous Jurassic plant localities. Many species of filicales, bennettitales, cycads and conifers are recorded from Beast Cliff; a prolific palaeobotanical locality with notable rarities.

Maritime:
The shores of Robin Hood's Bay between May Wyke and Beast Cliff are predominantly rocky, and moderately exposed to wave action. The varied geology along this coast plays a major role in creating an exceptionally wide range of habitats and associated communities for this part of the North Sea coast. Extensive examples of two rocky shore habitats are found here: moderately exposed flat bedrock and moderately exposed large and massive boulder fields. Slightly more exposed areas of the shore, such as at Whitehouse Hole are characterised by biotypes more typical of wave exposed shores.

Areas of gently dipping mudstones, shales and ironstones at the northern end of the site are characterised by complete zonation of rocky shore biotopes from the lichen-dominated *Verrucaria maura* biotope at the top of the shores, through fucoid biotopes characteristic of moderately exposed shores *Pelvetia canaliculata*, *Fucus spiralis*, *F. vesiculosus*, *F. serratus* into the kelp zone *Laminaria digitata* the latter which straddles the low water mark. In the Far Jetticks area, good quality, extensive areas of two nationally scarce red algal turf biotopes *Osmundea pinnatifida* and *Corallina officinalis* replace the more common fucoid-dominated biotopes and occupy much of the intertidal zone from the base of the cliff to the kelp zone. Here, the finely roughened bedding planes of mudstones belonging to the Cleveland Ironstone Formation provide surfaces for the firm attachment of holdfasts. The low shore kelp zone *Laminaria digitata* straddles the low water mark and forms the transition to highly rated subtidal kelp forest biotopes.

Robin Hood's Bay contrasts well with the Maw Wyke area as it is slightly more sheltered (but still falls within the moderately exposed selection unit). This area is particularly noteworthy for its rich and varied low shore communities, particularly the *Fucus serratus* and *Laminaria digitata* biotopes on bedrock and boulders. The presence of the relatively stable medium and large boulders provides additional habitats beneath and between the boulders for a wide variety of animal groups including sponges, anemones, bryozoans, crabs and shore fishes.

Along the southern section of the site, the shore between Blea Wyke and Beast Cliff is predominantly composed of large and massive boulders resting on a mudstone platform. The biology of this area again demonstrates the underlying effects of active geological processes. The upper shore lacks typical fucoids and is instead made up of ephemeral communities of green and red algae *Enteromorpha* sp., and *Porphyra* sp. This composition reflects the unstable nature of the friable upper shore talus beneath the cliffs. In the mid- and low-shore areas the boulders are characterised by typical biotopes of fucoids, kelps and red algal turfs. Areas of the shore lying below recent stumps, are dominated by dense turfs of the nationally uncommon *Rhodothamniella floridula* biotope which tolerates sediment scouring by binding sediment to form a cushion-like turf.

Hawsker Bottoms is also a key palaeobotanical and stratigraphical site and has the best inland exposure of the Scarborough Formation, here near the northern limit of its outcrop. It has provided one of the most varied fossil faunas from this portion of the Middle Jurassic, including the only corals so far recorded from this formation. The nearby Maw Wyke is an outstanding locality of national importance for the study of fossil ferns. A lens, within the Saltwick Formation, yielded particularly fine examples of the genera *Coniopteris*, *Cladophlebis* and *Phlebopteris* including fertile axes essential to systematic studies.

Robin Hood's Bay is an important site for coastal geomorphology for a series of well-developed shore platforms cut mainly across the outcrops of Lower Lias shales – siltstone rhythms. The surface morphology of the platforms reflects the arrangement of bedding within a broadly anticlinal structure which has been planed off. The cliffs near North Check and South Check include Middle Lias sandstones, relatively more resistant than the Lower Lias shales, whilst those within the Bay predominantly occur in Lias shale till and are locally affected by considerable mass movements. Robin Hood's Bay provides important contrasts with other platform sites, firstly through its location within the area affected by North Sea wave climates, and secondly in having been subject to glacial and post-glacial processes prior to sea-level reaching its present condition. The greater variety of interest, stratigraphical, palaeontological and geomorphological, make the Hawsker-Robin Hood's Bay-Ravenscar-Beast Cliff area one of the most famous and important for British Geology.

Biology:
Much of Beast Cliff is covered by scrub and woodland. Ash *Fraxinus excelsior* dominates the canopy with birch *Betula* spp., hazel *Corylus avellana* and field maple *Acer campestre*, although in more acidic situations oak *Quercus* aff. *robur*, rowan *Sorbus aucuparia* and holly *Ilex aquifolium* are frequent. Great wood-rush *Luzula sylvatica* is abundant on the steep flushed slopes, whilst dog's mercury *Mercurialis perennis* and opposite-leaved golden-saxifrage *Chrysosplenium oppositifolium* are plentiful in the ground flora of the terrace. Sandstone boulders support a luxuriant growth of mosses and ferns, including hart's-tongue *Phyllitis scolopendrium* and soft shield-fern *Polystichum setiferum*. Pools on the cliff shelf have been colonised by common club-rush *Schoenoplectus lacustris* and are fringed by alder *Alnus glutinosa*, willow *Salix* spp., and greater tussock-sedge *Carex paniculata*.

North of Beast Cliff the vegetation is more open and reflects alternating strata of rich and poor base-status. Typical of more calcareous clays are quaking-grass *Briza media*, glaucous sedge *Carex flacca*, kidney vetch *Anthyllis vulneraria* and grass-of-Parnassus *Parnassia palustris*, whereas heather *Calluna vulgaris*, bell heather *Erica cinerea*, crowberry *Empetrum nigrum*, goldenrod *Solidago virgaurea* and wavy hair-grass *Deschampsia flexuosa* characterise more acidic sandstone outcrops. Bracken *Pteridium aquilinum* and various shrub species such as gorse *Ulex europaeus*, broom *Cytisus scoparius*, goat willow *Salix caprea* and rowan *Sorbus aucuparia* are present in varying densities over much of the site.