County: Cumbria **Site Name: Sunbiggin Tarn and Moors and Little Asby Scar**

District: Eden

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

Local Planning Authority: Eden District Council

National Grid Reference: NY 678076 **Area:** 996.8 (ha) 2,463.1 (ac)

Ordnance Survey Sheet 1:50,000: 91 **1:10,000:** NY 60 NE, NY 61 SE, NY 70 NW

Date Notified (Under 1949 Act): 1954 **Date of Last Revision:** 1966

Date Notified (Under 1981 Act): 1986 **Date of Last Revision:** 1994

Other Information:

1. The boundary of the site has been modified by an extension during this revision and by the amalgamation of two former SSSI known as Sunbiggin Tarn and Moors and Little Asby Scar and Potts Valley.
2. The site incorporates Sunbiggin Tarn, Sunbiggin Tarn Fen and Orton Fells listed in 'A Nature Conservation Review' edited by D. A. Ratcliffe 1977, published by Cambridge University Press.
3. Part of this site is managed as a nature reserve by the Cumbria Wildlife Trust.
4. The site is adjacent to the Great Asby Scar SSSI.
5. Part of this site is included within the Asby Complex Limestone Pavement Order.

Description and Reasons for Notification:

Sunbiggin Tarn and its surrounding moorland lie 5 km east of Orton village at an altitude of 250–380 m. The site includes the whole of Tarn Moor and Little Asby Common, and parts of Ravenstonedale Moor and Crosby Garret Fell. The Tarn itself is a small upland marl lake surrounded by rich fen which, along with Cow Dub Tarn, forms a wetland area of outstanding biological interest. The Tarn lies within an area of Carboniferous limestone upland, with scars and pavements of geological interest surrounded by heath, acid grassland and areas of acid and calcareous mire. The whole of the site is of outstanding importance for its range of habitats and for the important flora and fauna they support.

Sunbiggin and Cow Dub Tarns form an area of about 6 ha of open water. The water is generally shallow and base-rich, being derived from calcareous springs to the north of the Tarn. The outflow is along Tarn Sike, which is bounded by basic flushes along much of its course through the site. The open water of the two tarns supports few submerged higher plants, probably due to increased planktonic algal growth fed by nutrients from the droppings of a large black-headed gull colony. However, aquatic species are found in Tarn Sike and the basic flushes; the curled and broad-leaved pondweeds *Potamogeton crispus* and *P. natans* tend to predominate but other species include opposite-leaved and small pondweeds *Groenlandia densa* and *Potamogeton berchtoldii*, spike water-milfoil *Myriophyllum spicatum*, stonewort *Chara* sp., common water-crowfoot *Ranunculus aquatilis* and greater bladderwort *Utricularia vulgaris*. These calcareous waters are also rich in invertebrates; the flushes support two very rare snail species that are relicts from the last Ice Age: *Vertigo geyeri* at its only known British locality and *Catinella arenaria* which is known only from three other British sites.

Adjacent to the tarns are extensive areas of swamp and fen communities. Common reed *Phragmites communis* dominates a large zone extending into standing water up to 1 m deep. Bottle sedge *Carex rostrata* dominates a much more mixed fen along with species such as slender and greater tussock sedge *Carex lasiocarpa* and *C. paniculata*, common spike-rush *Eleocharis palustris*, soft rush *Juncus effusus*, water horsetail *Equisetum fluviatile*, bog bean *Menyanthes trifoliata* and mare's-tail *Hippuris vulgaris*. More restricted fen communities include a type dominated by tufted-sedge *Carex elata*, a very local and mainly eastern species in Britain, stands of the great fen-sedge *Cladium mariscus* which is uncommon in the north-west and is here at its highest locality, and other types dominated by either meadowsweet *Filipendula ulmaria* or marsh cinquefoil *Potentilla palustris* which occurs with the nationally scarce lesser tussock-sedge *Carex diandra*.

West of the tarns, the fen communities merge into calcareous flushes bordering the Tarn Sike as it meanders across Tarn Moor. These base-rich flushes also occur along Potts Valley and the northern edge of Ravenstonedale Common. The main communities range from springs and tufa-forming mounds of mosses *Cratoneuron commutatum* and *Philonotis* species to a mixed short sedge community characterised by the black bog-rush *Schoenus nigricans* and small sedges such as dioecious sedge *Carex dioica*, long-stalked yellow-sedge *C. lepidocarpa*, tawny sedge *C. hostiana* and glaucous sedge *C. flacca*. Several species confined to this habitat are of particular note such as the few-flowered spike-rush *Eleocharis quinqueflora*, the broad-leaved cottongrass *Eriophorum latifolium*, grass-of-Parnassus *Parnassia palustris*, variegated horsetail *Equisetum variegatum*, flat and hair sedges *Blysmus compressus* and *Carex capillaris*, lesser clubmoss *Selaginella selaginoides* and the nationally scarce bird's-eye primrose *Primula farinosa*. Around the flushes, areas of wet pasture support a rich flora with species such as devil's-bit scabious *Succisa pratensis* and northern and early marsh orchid *Dactylorhiza purpurella* and *D. incarnata* occurring in a sward dominated by sedges, purple moor-grass *Molinia caerulea* or sharp-flowered rush *Juncus acutiflorus*. Another interesting feature of this area is the occurrence of acidic mire adjacent to calcareous flushes or hollows. Here acid-loving species such as bog mosses *Sphagnum* species, cross-leaved heath *Erica tetralix* and round-leaved sundew *Drosera rotundifolia* can occur within inches of the calcareous vegetation.

Heather moorland dominated by ling *Calluna vulgaris* occupies much of the site, for example on Tarn moor, Rayseat Pike and south of Lousy Brow, part of a once extensive grouse moor. However in places high grazing pressure has caused heathland to degrade into grassy heath or more uniform mat-grass *Nardus stricta* grassland. Parts of the moor support fine stands of a herb-rich type of heath similar to the 'chalk heaths' of southern Britain. Amongst the heather there is found a range of species not normally associated with heathland in northern Britain, such as bird's-foot trefoil *Lotus corniculatus*, salad burnet *Sanguisorba minor* and the lady's bedstraw *Galium verum*.

Extensive areas of limestone pavement occur on Grange Scar, Little Asby Scar and Crosby Garrett Fell. Floristically these pavements are quite depauperate as a result of high grazing pressure and pavement structure. However species such as green spleenwort *Asplenium viride* and brittle bladder-fern *Cystopteris fragilis* are frequent in the area with others such as the nationally scarce limestone fern *Gymnocarpium robertianum*, wall-rue *Asplenium ruta-muraria*, male-fern *Dryopteris filix-mas*, broad-leaved willowherb *Epilobium montanum* and occasionally ramsons *Allium ursinum* and colt's-foot *Tussilago farfara*. Blue moor-grass *Sesleria albicans*, a nationally scarce species restricted to northern limestone habitats, is frequent in the grikes and on surrounding calcareous grasslands where it occurs with quaking grass *Briza media*, wild thyme *Thymus praecox*, salad burnet and the nationally scarce limestone bedstraw *Galium sterneri*. The nationally rare bird's-foot sedge *Carex ornithopoda* is found on the scars above Potts Valley.

The whole site is very important ornithologically with the extensive areas of calcareous open water and fen, as well as the heathland, providing suitable cover and food for many breeding, passage and wintering bird species. Most obvious is the nationally important colony of over 12,000 breeding pairs of black-headed gulls around Sunbiggin Tarn (exceeding 1% of the British breeding population). However, several species of waterfowl also breed around the tarns or on the moor. These are wigeon, teal, tufted duck, gadwall and mallard. Other breeding species of note include little grebe, sedge warbler and water rail, with the wetlands also being well used by lapwing, curlew, redshank and snipe. The area is important for wintering wildfowl and other birds and also seems to be a well used resting place for many species on passage. Regularly recorded are species such as goldeneye, pochard, whooper swan, goosander, whimbrel, merlin, peregrine, raven and short-eared owl.

The limestone scars and pavements are of geological interest both for stratigraphy and Karst geomorphology. Sections on Little Asby Scar, the area to the north and west of the Potts Beck, expose both the topmost Ashfell Limestone and the overlying Potts Beck Limestone. In addition the area has been proposed as a regional stratotype for the Asbian Stage, a unit within the Dinantian Series. The area has much research potential for both stratigraphic and micropalaeontological studies and is one of the key localities in the Carboniferous Limestone of northern England. This is a nationally important locality, of significance in correlating Lower Carboniferous sections in north-west Europe.

Soil and drift covers varies in thickness across the site and most of the limestone pavement consists of isolated clints with good rundkarren, separated by broad soil-filled grikes. The area was on a basal ice shed though much of the Devensian and the Potts Valley has pre-glacial origins. Much of the pavement is probably therefore of unusually great age.