High Cup Nick is in the North Pennines Area of Outstanding Natural Beauty (AONB) and UNESCO Global Geopark.

What is a UNESCO Global Geopark?

The North Pennines AONB is a UNESCO Global Geopark. Geoparks are places with outstanding geology and landscape, where there are strong local efforts to make the most of Earth heritage through interpretation, education, conservation and tourism. To find out more go to www.visitgeoparks.org

Find out more about North Pennine geology

This leaflet is one of a series of geological trails and publications for the North Pennines. To discover the others and find out more about our geological heritage, visit www.northpennines.org.uk

This is an original publication by the North Pennines AONB Partnership, with thanks given to members of the AONB Partnership's Geopark Advisory Group for their expertise and input. Thanks also to Jim Hardman for providing his knowledge and photography.

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Photos © Jim Hardman: Front cover, fell pony, peat restoration, Whin Sill and snow view.

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The North Pennines Area of Outstanding Natural Beauty (AONB) and UNESCO Global Geopark is one of England's finest landscapes. Explore flower-rich hay meadows, wide open moorlands, intimate woods, tumbling rivers and dramatic waterfalls; discover world-class geology and mining heritage; experience truly dark night skies; and encounter special wildlife.

A walk of 12-22.5km (7.5-14 miles) exploring the distinctive geology of the North Pennine escarpment and the impact of the last Ice Age on its landscape.

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High Cup Nick Geotrail

Shaped by ice and molten rock

NORTH PENNINES Area of Outstanding Natural Beauty

United Nations Educational, Scientific and Cultural Organization

North Pennines UNESCO Global Geopark

Welcome to a special landscape...

...shaped by millions of years of natural processes and thousands of years of human activity.

This trail leads the way from the Eden Valley villages of Dufton and Murton up to High Cup Nick, offering incredible views of the glacial valley High Cup Gill, and pointing out areas of interest throughout this long, challenging walk. In places this trail is unmarked, but mainly follows footpaths with wooden waymarker posts and stone piles that guide the way. There are several walk options so you can choose the length or difficulty that is right for you.

Walk length:
Dufton to HCN and return: 12km (7.5 miles)
Circular walk from Dufton: 17km (10.5 miles)
Circular walk from Murton: 14km (9 miles)
Full circular walk: 22.5km (14 miles)

Start/finish:

Dufton: Dufton village car park (public toilets available)

Grid reference: NY 689 249

Murton: Take the unnamed road heading north-east from the centre of Murton Village. At the end of this road is a small car park.

Grid reference: NY 729 219

Terrain: This trail uses footpaths and tracks, some of which are less visible on the ground. Use of an Ordnance Survey map and compass is highly recommended. Strong boots, warm clothing and good waterproofs are advised, as even in summer the weather on the North Pennine escarpment can be harsh and cloud can descend quickly. Please be aware that high winds will increase this walk's difficulty as some footpaths are very exposed. Checking the forecast before attempting this walk is advised.

Public transport: For timetable information call Traveline on 0871 200 2233 (www.traveline.info)

Useful maps:

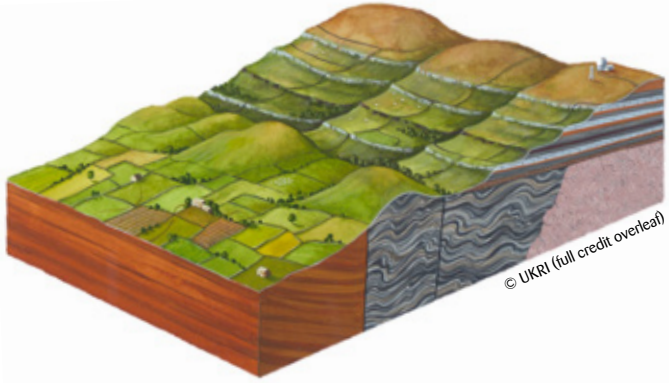
Ordnance Survey
1:25 000 Explorer OL19 Howgill Fells and Upper Eden Valley

British Geological Survey
1:50 000 Geological Sheet 31 Brough under Stainmore
1:25 000 Geological Special Sheet 12 The Cross Fell Inlier

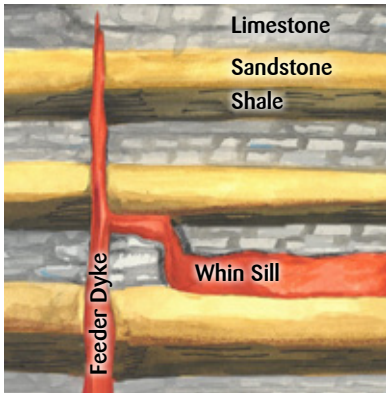
The Pennine escarpment

This walk crosses the Pennine escarpment, where the hills of the North Pennines drop away to the Eden Valley. These hills are mainly formed of repeating layers of limestone, shale and sandstone laid down between 360 and 300 million years ago in a period known as the Carboniferous. The small distinct hills that line the bottom of the escarpment are made up of slates and volcanic rocks, which lie beneath the Carboniferous rocks. These rocks are the oldest in the North Pennines, dating back around 450 million years. They are part of the same group of rocks that form the Lake District mountains and are quite different from neighbouring Pennine landscapes.

The escarpment runs along the line of an ancient fault zone. Major earth movements uplifted the rocks on one side of the fault zone compared to the other. Subsequent erosion over millions of years created the landscape we see today with steep slopes and crags marking the outcrops of the resistant limestones, sandstones and Whin Sill dolerite. The Eden Valley in contrast is underlain mainly by red sandstones formed during Permian and Triassic times, between 290 and 210 million years ago.



The Whin Sill



Stretching of the Earth's crust around 295 million years ago caused molten rock at over 1,000°C to rise up and spread out between the layers of older rocks. It cooled and solidified underground to form the Whin Sill; a vast, roughly horizontal sheet of a hard, dark rock called dolerite (known locally as whinstone). The word 'sill', used by local quarrymen for a flat-lying layer of rock, was adopted worldwide by geological science for similar bodies of rock formed in the same way. After millions of years of erosion, the Whin Sill is now exposed at the surface in several places creating some of the most dramatic features of the North Pennines. Look out for column-like features that formed as the rock cooled and cracked in vertical lines.

Glaciation

20,000 years ago, the North Pennines, along with much of northern Europe, was beneath a vast ice sheet up to a kilometre thick in places. As the ice crawled across the land, carrying boulders, gravel and sand with it, it modified the hills and valleys of the North Pennines to form the dramatic landscapes we see today. The effects of ice and water past and present are clear to see on this walk.

1 A The Eden Valley

Take a look at the view behind you. On a clear day you will be able to make out the Lake District fells across the skyline. The red sandstone rocks that dominate the Eden Valley between you and those distant fells can be seen in the building stones used in Murton and Dufton.

2 D Crags and scars

Rocky scars and crags, such as Murton Crag on the slopes of Murton Pike and Delfekirk Scar on Mell Fell, are prominent due to hard limestone beds. The repeating layers of different rocks mean that the slope of the surrounding hillsides varies as some layers (particularly shales) erode more easily than others. The limestone beds form flat shelves.

3 C Mines and quarries

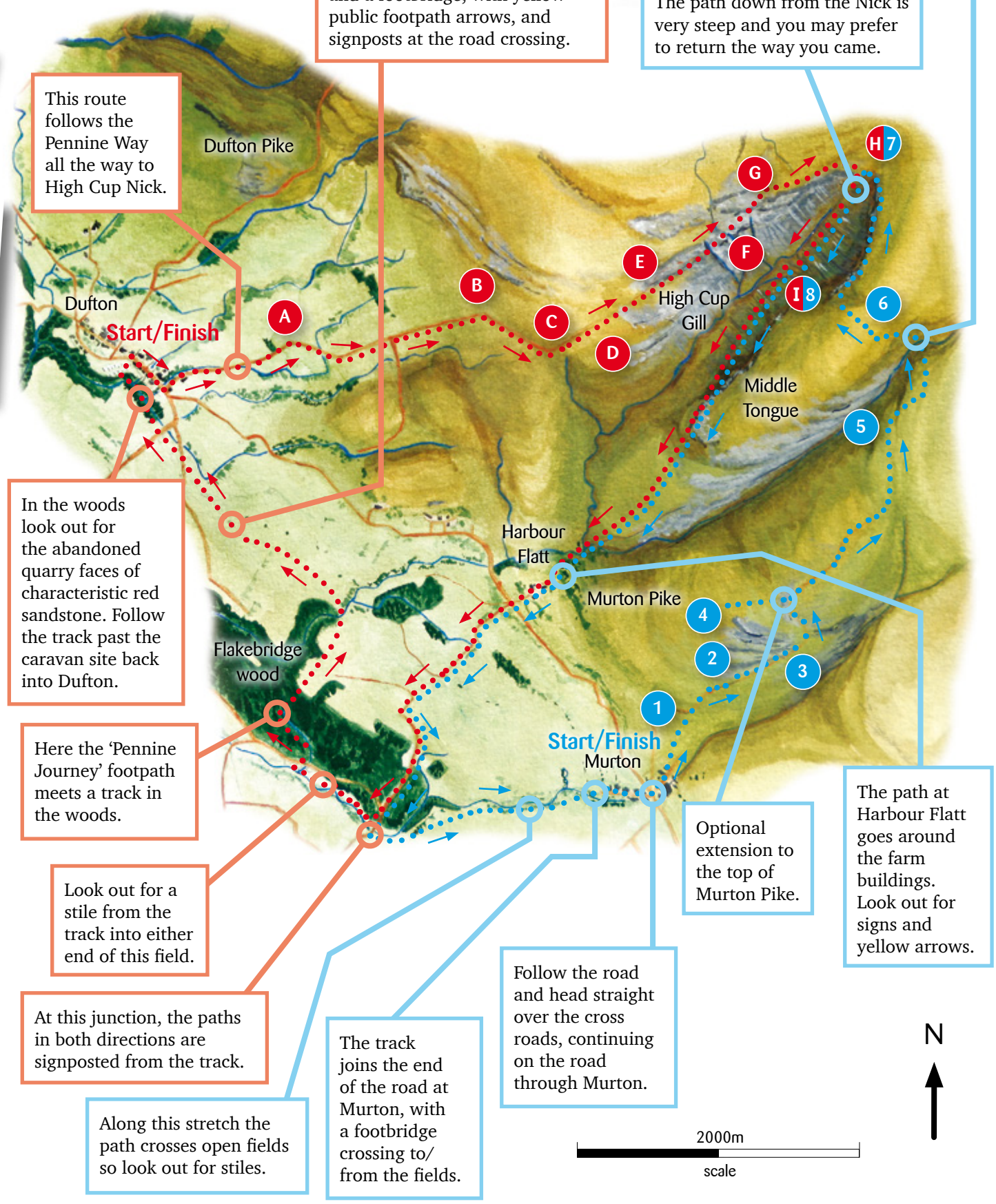
Mine workings can be seen from the Murton path. This is an old lead mining area known as White Mines. This mine was worked for galena (lead ore) as early as the 14th century.

A quarry and limekiln can be seen from the Dufton path. Limestone from the quarry was burnt in the kiln to make quicklime (calcium oxide). It was then `slaked' with water to produce calcium hydroxide, which had many uses including making mortar and improving the soil for farming.

4 B Murton and Dufton Pike

Murton and Dufton Pikes are conical hills made up of some the oldest rocks in the North Pennines. 500 million years ago, mud, silt and volcanic ash were deposited on the edge of an ancient ocean. As the ocean closed up, the newly-formed rocks were folded under pressure and have eroded differently to the later rocks above them. Dufton Pike is made up of volcanic material, whereas Murton Pike is made up of slates.

This walk is recommended as a linear walk from Dufton and back the same way (A-H, total 12km), circular from Dufton (red, 17km) or Murton (blue, 14km), or any combination of the two routes.



This route follows the Pennine Way all the way to High Cup Nick.

Between Flakebridge Wood and Dufton village the path stays close to the field boundaries. There are several stiles and gates and a footbridge, with yellow public footpath arrows, and signposts at the road crossing.

The path down from the Nick is very steep and you may prefer to return the way you came.

After crossing over Trundale Gill, the path is harder to see from here on to High Cup Nick. Look out for the stone piles and wooden stakes to guide you.

In the woods look out for the abandoned quarry faces of characteristic red sandstone. Follow the track past the caravan site back into Dufton.

Here the 'Pennine Journey' footpath meets a track in the woods.

Look out for a stile from the track into either end of this field.

At this junction, the paths in both directions are signposted from the track.

Along this stretch the path crosses open fields so look out for stiles.

The track joins the end of the road at Murton, with a footbridge crossing to/ from the fields.

Follow the road and head straight over the cross roads, continuing on the road through Murton.

Optional extension to the top of Murton Pike.

The path at Harbour Flatt goes around the farm buildings. Look out for signs and yellow arrows.

5 E Limestone country

Here the path passes a number of small sinkholes, also known in the North Pennines as 'shake holes'. Limestone dissolves gradually in rainwater. Cracks channel the rainwater into the rock, and slowly widen into a cave system. The overlying soil and rock debris fall in, forming a depression on the surface. You can see many of these features throughout the walk.

6 Peat restoration

Just off the route to your right is an area of peatland being restored by the North Pennines AONB Partnership. Peat began to form as the ever-changing climate became wetter around 7,500 years ago. Accumulating over the last few thousand years and a major store of carbon, peat plays an important part in mitigating current climate change. The work here slows down water and reduces erosion, allowing bare peat to then be revegetated. Peat habitats are also very important for wildlife and for water.

F & G Whin Sill features

The narrow waterfall that drops over the sheer cliffs to your right after crossing the path is Hannah's Well. Further along the path, can you spot the isolated column of Nichol's Chair along the Whin Sill scar? It is said to have been named after a Dufton cobbler, Mr Nichol, who not only climbed to its top, but soled and heeled a pair of boots while sitting there!

7 H High Cup Nick

The cliffs of the Whin Sill at High Cup Nick are formed from the dark, hard rock dolerite (see overleaf). During the last glacial period, around 20,000 years ago, the North Pennines lay under a huge ice sheet. Ice and meltwaters sculpted this classic U-shaped valley, known as High Cup Gill. As the ice melted, an unstable landscape was left behind. A large landslip on the slopes of High Cup Gill exposed the Whin Sill as a scar that outlines the valley.

8 I High Cup Gill

Walking along the edge of the valley you can really appreciate the sheer size of the glacial gill and imagine the vast ice sheet that once sat here. The sides of this valley were widened and smoothed out as the glacier, encasing tonnes of boulders, gravel and sand, moved across the land.