This walk 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 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.

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.

An 8km (5 mile) walk exploring the rocks, mining features and waterfalls of the Hudeshope valley, from Middleton-in-Teesdale.

North Pennines AONB Partnership
www.northpennines.org.uk
+44 (0)1388 528801
info@northpenninesaonb.org.uk

NorthPenninesAONB
@NorthPennAONB
northpennines
northpenninesaonb

Landscapes for life .org.uk

NORTH PENNINES
One of the AONB family

recycle

Made possible with Heritage Fund

5 059800 000098

Interreg Atlantic Area
European Regional Development Fund
EUROPEAN UNION

Hudeshope from Middleton Geotrail

Mines, views and meadows

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 circular route takes you from the village of Middleton-in-Teesdale to explore the rich geological and mining heritage of the lovely Hudeshope valley. The route crosses a number of mineral veins that were once worked commercially, and the remnants of mining operations, including old shafts and entrances, can be seen in several places. Many of these are unstable. Please keep to the footpaths and do not attempt to enter tunnels or surface excavations.

Walk length:
8km (5 miles)

Start/finish:
Start from Middleton-in-Teesdale. There is limited parking in the village so please park sensitively. This walk begins by the Teesdale Hotel. Middleton has public toilets and numerous shops, cafes and pubs.

Grid reference: NY 947 254

Terrain: This trail uses public footpaths and minor roads, although some of the route crosses fields where paths are not always obvious. Strong boots, warm clothing and good waterproofs are advised.

If you are walking this route between April and July, please be aware of ground nesting birds and always stick to footpaths.

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

Useful maps:

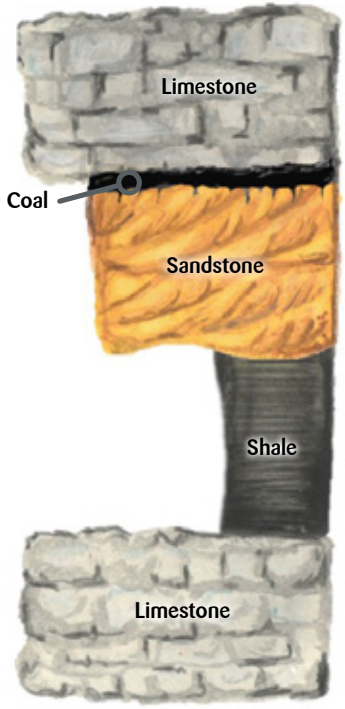
Ordnance Survey
1:25 000 Explorer OL31 North Pennines Teesdale and Weardale

British Geological Survey
1:25 000 Geological Sheet NY82 and part of NY92 Middleton-in-Teesdale

1:50 000 Geological Sheet 25 Alston

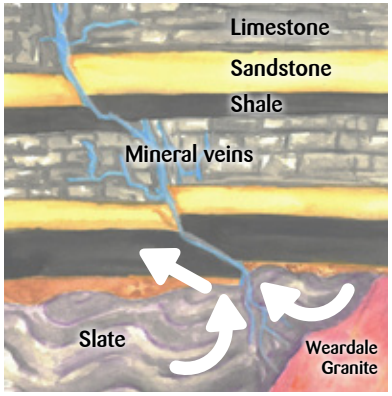
1:50 000 Geological Sheet 31 Brough under Stainmore

Layered rocks



Between 360 and 300 million years ago, in the Carboniferous Period of Earth history, the area that was to become the North Pennines lay almost on the equator. Remains of the abundant marine life formed a limey mud on the sea floor, which eventually hardened to form limestone. River deltas periodically covered the seabed in sand and mud when sea levels were low, forming layers of sandstone and shale. When the sea level rose again, a new layer of limestone formed over the top and the process repeated. Much of the North Pennines consists of regular alternating layers of limestone, shale and sandstone called cyclothems. Shale is much softer than the limestone and sandstone so erodes away more easily, causing the repeated bench-like profile of many of the hillsides, along with many impressive waterfalls.

Minerals and mines



The North Pennines rocks are cut by numerous mineral veins, which carry ores of metals such as lead, iron, zinc and occasionally copper, together with a variety of other 'spar' minerals. The veins in the Hudeshope valley were primarily worked for lead. These were formed around 290 million years ago as warm waters, rich in dissolved minerals, flowed through cracks and faults, driven by heat deep beneath the surface. As these solutions cooled, the dissolved minerals crystallised inside the cracks to form the veins.

Method in the mining

Hushing is one method of mining that was used in the North Pennines. It involved gathering water in a reservoir, digging out a channel and releasing the water down the slope. It was either used to reveal the location of mineral veins, or to extract material.

Underground mining became more common as the veins were followed beneath the surface. Shafts were sunk and levels were driven into the hillside on a slight incline, allowing water to drain out easily. The main 'horse levels' were built to accommodate the size of ponies that helped move materials.

Miners worked in 'partnerships' (often family units) and mined an area for a price set by the mine owners. Miners were paid for the amount of ore they produced and all the costs they collected were deducted from their final pay. This included things like candles, tools and the cost of maintaining them, explosives, the cost of hauling crude ore from the mine and the cost of dressing it on the washing floor outside.

The crude ore was dumped into 'bouseteems'; stone alcoves in which each partnership's ore was kept before processing. Children as young as eight worked on washing floors, where they would separate the galena (lead ore) from the host rock. Lead minerals are very dense, so by shaking the ore in water the minerals could be separated into layers as the galena sank to the bottom.

1 Middleton-in-Teesdale

Middleton-in-Teesdale's earliest document of existence is from a church record in the 12th century. Farming was the biggest source of income for the area until the rise of mining and quarrying in the 18th and 19th centuries.

Middleton House

Before you turn onto the footpath, continue up the road to Middleton House. Built in 1815, this was the impressive northern headquarters of the London Lead Company and home to its Chief Agent. A large repair centre for mine machinery lay behind the house.

2 Wildflowers

Between April and October, many of the fields on this route are full of wildflowers. These hay meadows are a rare and precious habitat for plants, invertebrates and ground-nesting birds. A spotter guide for identifying hay meadow flowers and grasses can be accessed on our website.

3 Surrounding geology

The beck has cut into the local rocks. The hilltops surrounding you are predominately sandstone and shale cyclothems (see overleaf). They sit on top of older limestone which the beck now runs over.

A prominent feature to look out for in the North Pennines is the step-like shape of the hills. These are produced by the differences in resistance in the layers of rock.

4 Waterfalls

These waterfalls are formed because the layers of rock erode differently, as mentioned above. Limestones and sandstones tend to be more resistant to erosion compared to shales and siltstones, forming ledges as the water flows over them. As you continue, notice the different rock layers in the walls of the gorge.

5 Low Skears Mine

To your right is the entrance to Low Skears Mine. The mines were first worked by Backhouse & Co. from 1845 to 1862. The London Lead Company took over operation of this mine between 1863 and 1881. The Skears Mines extracted ore from eight mineral veins. The veins were named alphabetically, from A to H; an unusual system for the Pennine orefields.

After you come out of the woodland there is a mound to your left. This spoil heap is from Skears Firestone Level, which was connected to Low Skears Mine underground.

6 Taking in the landscape

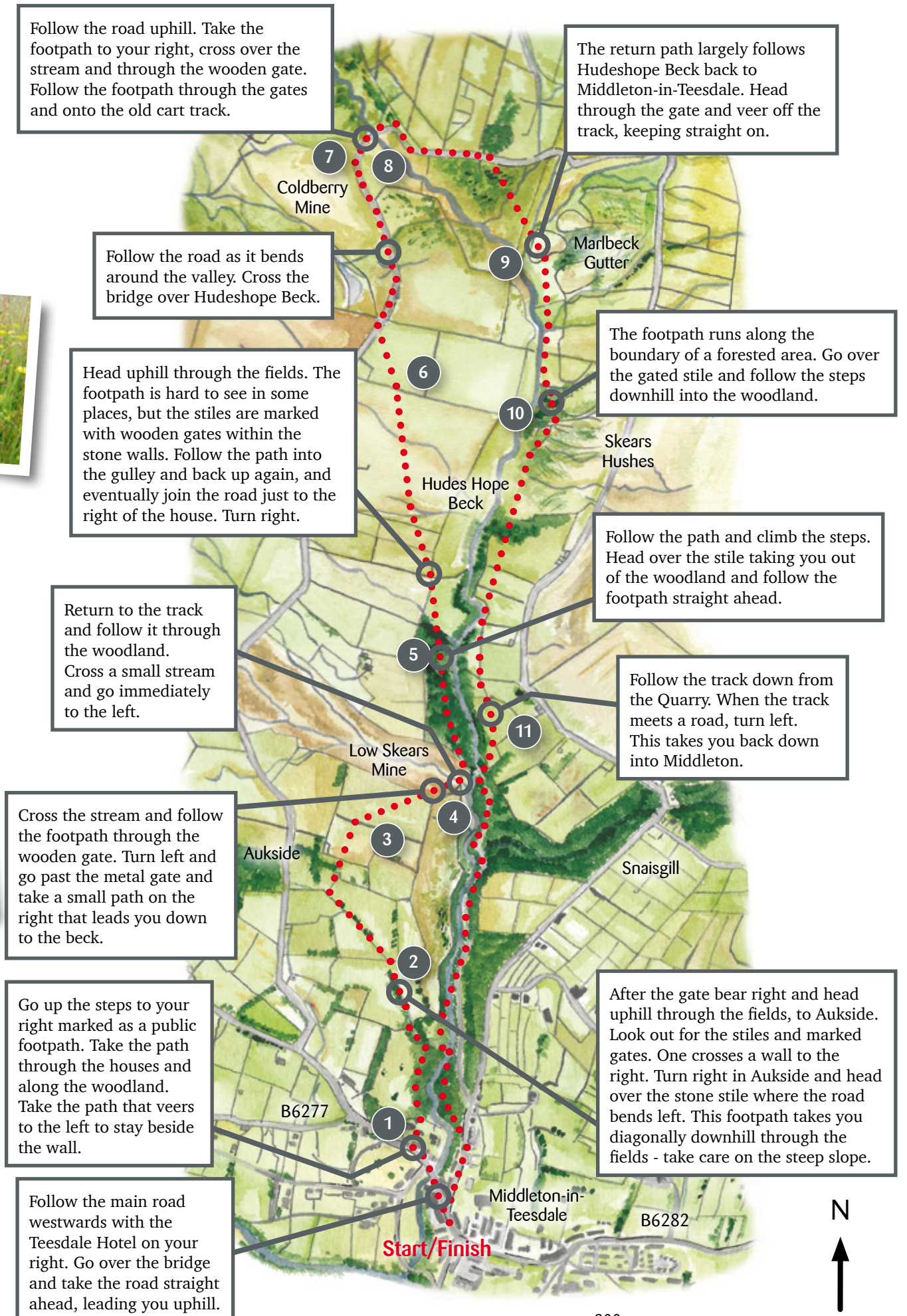
This spot gives you a great view of the eastern side of the valley. Next to the mine tips to the north is Marl Beck. The next three channels make up Marlbeck Gutter. Further to the right the valley sides become lumpy, around the Skears Hushes.

7 Coldberry Gutter

To your left are buildings and tips belonging to the Coldberry Gutter mining complex. The area can be visited by taking the path to your left onto Open Access Land.

Coldberry Gutter is one of the most prominent features in the North Pennines landscape. Detailed research has revealed that this striking gully, at up to 50m wide and around 30m deep, is almost certainly a channel cut by meltwaters around 11,000 years ago at the end of the last glacial period, when the ice sheet covering Teesdale was melting rapidly. The hillsides show remnants of workings in rich lead ore-bodies beneath the level of the Gutter. As these include a number of old shafts and entrances, great care should be taken when exploring.

The Gutter also provides a rare opportunity to see an exposure of the Armathwaite-Cleveland Dyke, a narrow vertical wall of hard rock injected as molten rock around 65 million years ago and traceable from the Isle of Mull to the Yorkshire coast.



8 Hudeshope Beck

Around the bridge over the Hudeshope Beck, spreads of metal-rich tailings from ore processing form areas of bare or poorly vegetated ground. Specialised plants, known as metallophytes, including spring sandwort (sometimes known locally as leadwort) ***(Minuartia verna)***, alpine pennycress ***(Noccaea caerulecens)*** and scurvy grass ***(Cochlearia officinalis)***, thrive here on these soils.

9 Marlbeck Gutter and Mine

The channels to your left together comprise Marlbeck Gutter. The Marlbeck Vein has been worked here in hushes and two underground levels. The underground workings are connected to Lodgesike Mine, whose extensive spoil heaps can be seen on the northern side of the valley.

The footpath takes you past the mine entrance and the old mine shop. The mine shop accommodated the mine manager's office, the blacksmith's shop and the stable.

10 Skears Hushes and High Skears Mine

The Skears Hushes are a prominent feature in the landscape. The sloping valley sides have been shaped by numerous interweaving channels and spoil heaps. Below the hushes are some stone structures associated with the well-hidden mines of High Skears. There are remnants of the mine shop, the washing floor, and some bouseteems.

11 Skears Quarry and lime kilns

This area was quarried for limestone. Huge outcrops of a layer known as the Great Limestone are visible.

The stone structure lower down is a derelict lime kiln. Limestone from Skears Quarry would have been transported to one of the four kilns and burnt to make quicklime (calcium oxide). It then had to be 'slaked' with water to produce calcium hydroxide, which had many uses such as making mortar and neutralising acid soil.