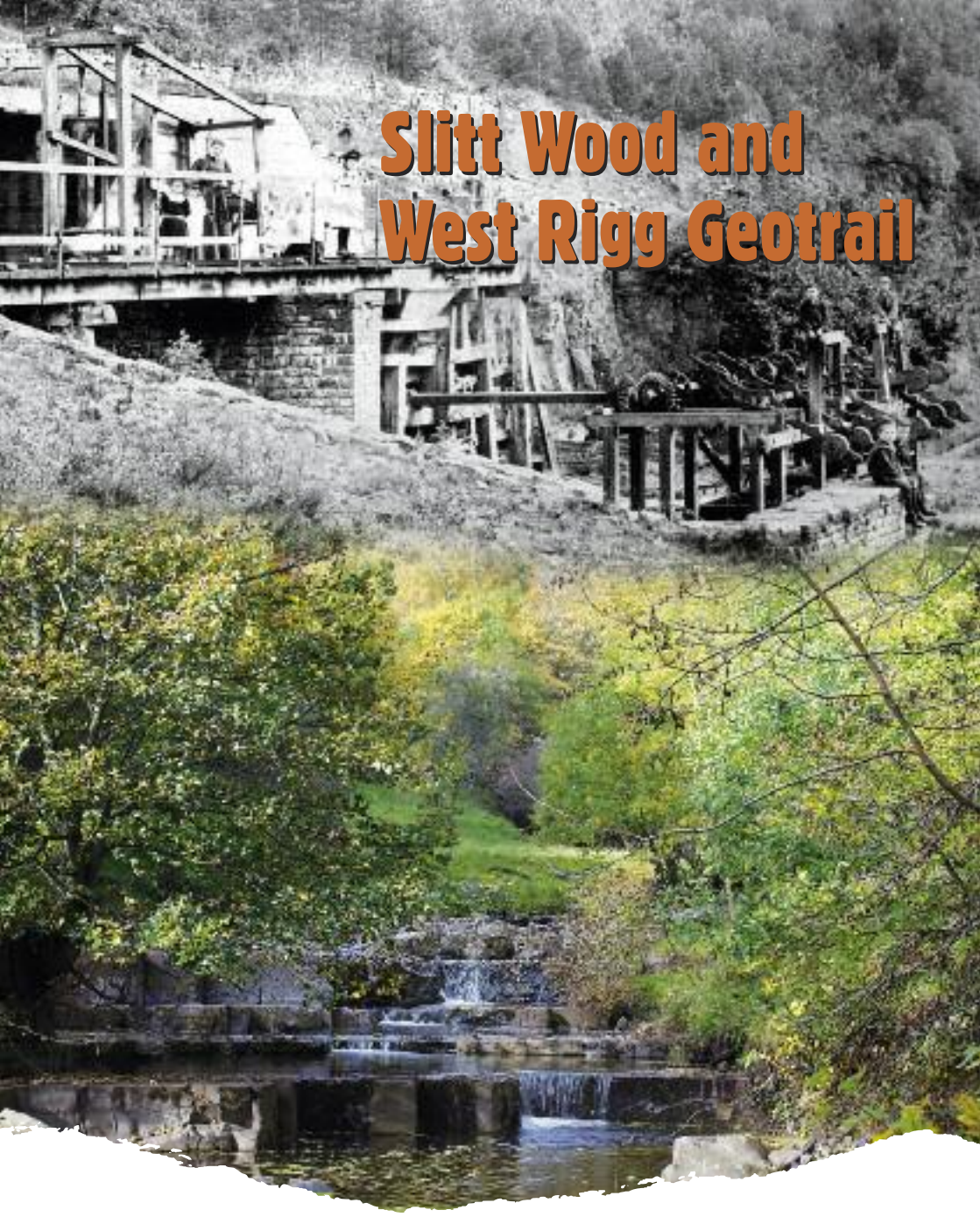


Slitt Wood and West Rigg Geotrail



NORTH PENNINES

Area of Outstanding Natural Beauty

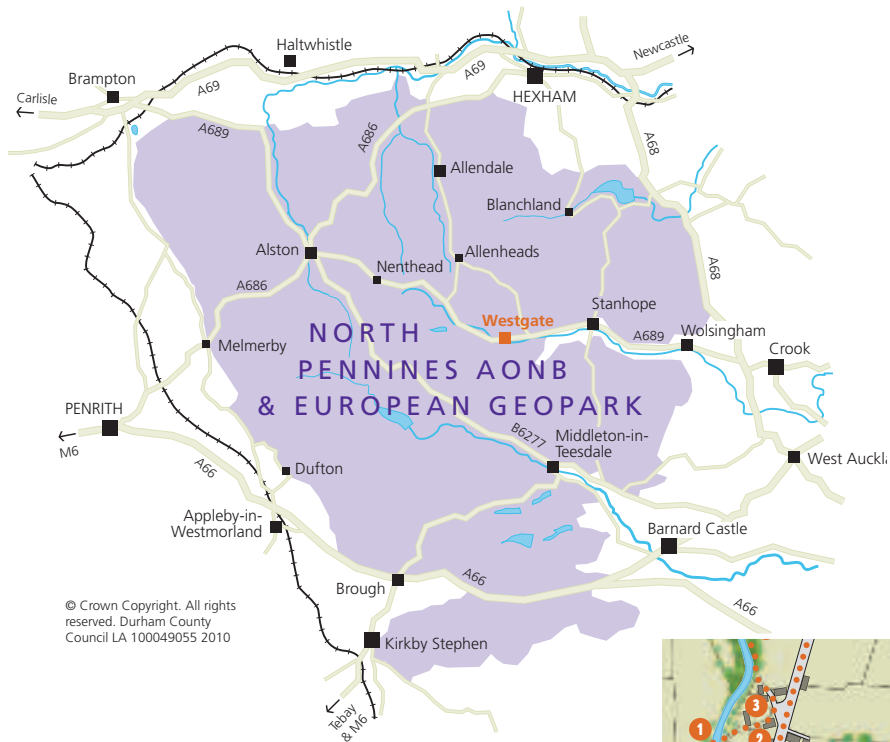


The North Pennines Area of Outstanding Natural Beauty

The AONB designation for the North Pennines was confirmed in June 1988. At almost 2,000km² it is the second largest of the 40 AONBs in England and Wales and is one of our most wild and unspoilt places. The AONB has internationally important numbers of breeding wading birds, rare arctic alpine flora, wide expanses of moorland, a rich historic environment, nationally important hay meadows and a unique geological heritage.

A European and Global Geopark

European and Global Geoparks are established tourism destinations with an outstanding geological heritage and a sound management structure. They are places where there is considerable local effort to conserve geodiversity and encourage public understanding and enjoyment of it. In June 2003, the AONB became Britain's first European Geopark and in April 2004 it became a founding member of the UNESCO-supported Global Geoparks Network. New continental Geoparks Networks are becoming established worldwide. Contact the North Pennines AONB Partnership for more details or visit www.northpennines.org.uk or www.europeangeoparks.org



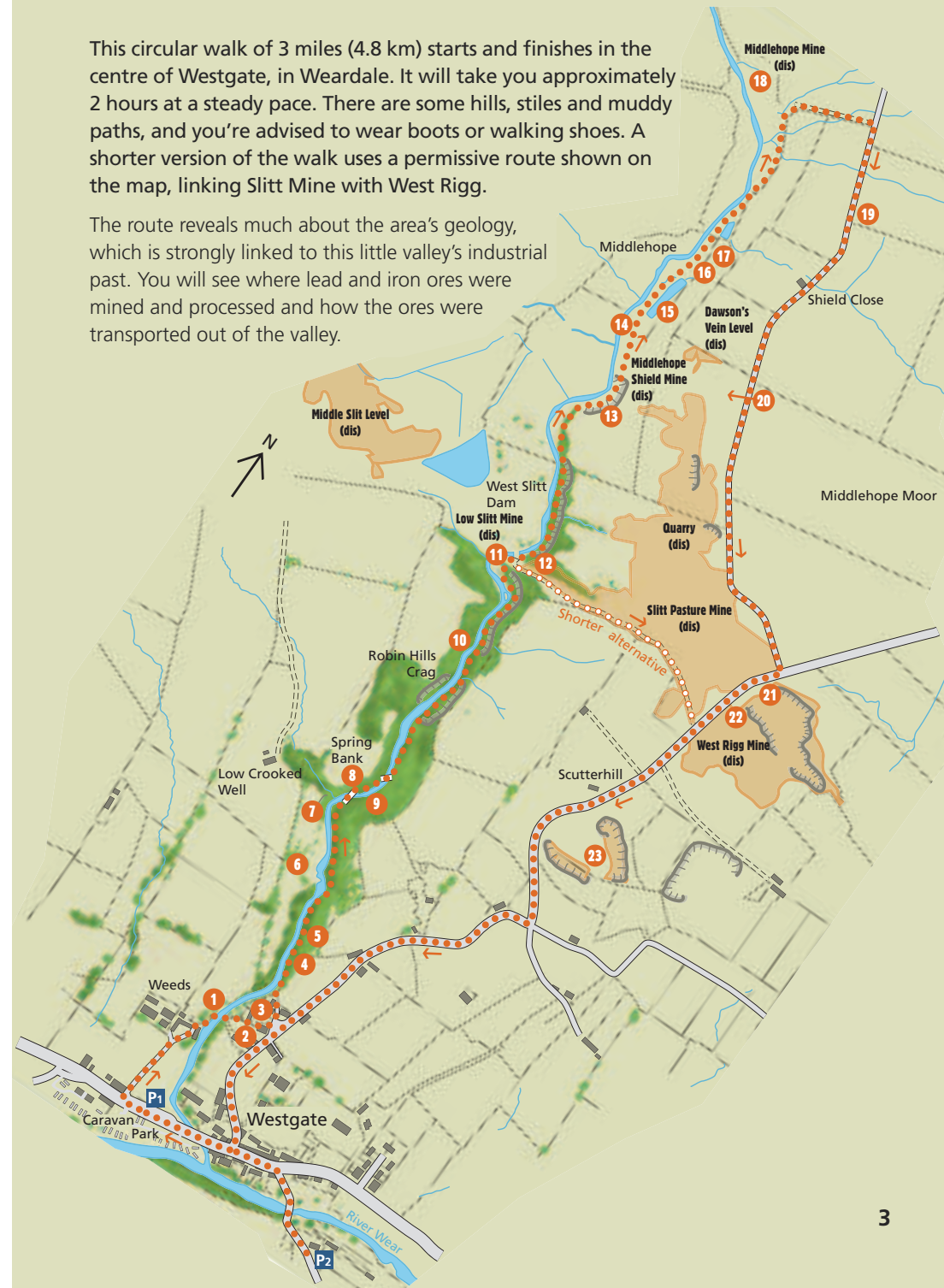
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Start: Park in the layby opposite the caravan site in Westgate **P1**, or at the formal parking area at Haswicks **P2**.
Grid ref: NY90638, OS map 92 and Explorer OL31.



This circular walk of 3 miles (4.8 km) starts and finishes in the centre of Westgate, in Weardale. It will take you approximately 2 hours at a steady pace. There are some hills, stiles and muddy paths, and you're advised to wear boots or walking shoes. A shorter version of the walk uses a permissive route shown on the map, linking Slitt Mine with West Rigg.

The route reveals much about the area's geology, which is strongly linked to this little valley's industrial past. You will see where lead and iron ores were mined and processed and how the ores were transported out of the valley.



A special place

Slitt Wood and West Rigg Opencut are legally protected as Sites of Special Scientific Interest (SSSI). Slitt Wood is designated for its variety of habitats including woodland, lime-rich grassland, fen, open water and the revegetated workings of Slitt and Middlehope Mines. The spoil heaps from the lead mines support lead tolerant plants, known as metallophytes. West Rigg is designated for its geological importance. It provides an excellent illustration of the formation of iron ore and the opencast ironstone workings which expose the structure of a lead vein.

Many of the industrial remains also have legal protection as scheduled monuments of national archaeological importance. Many different types of plants and birds can also be spotted at different times of year, especially in spring and summer.



Revegetated spoil heaps near West Rigg Opencut



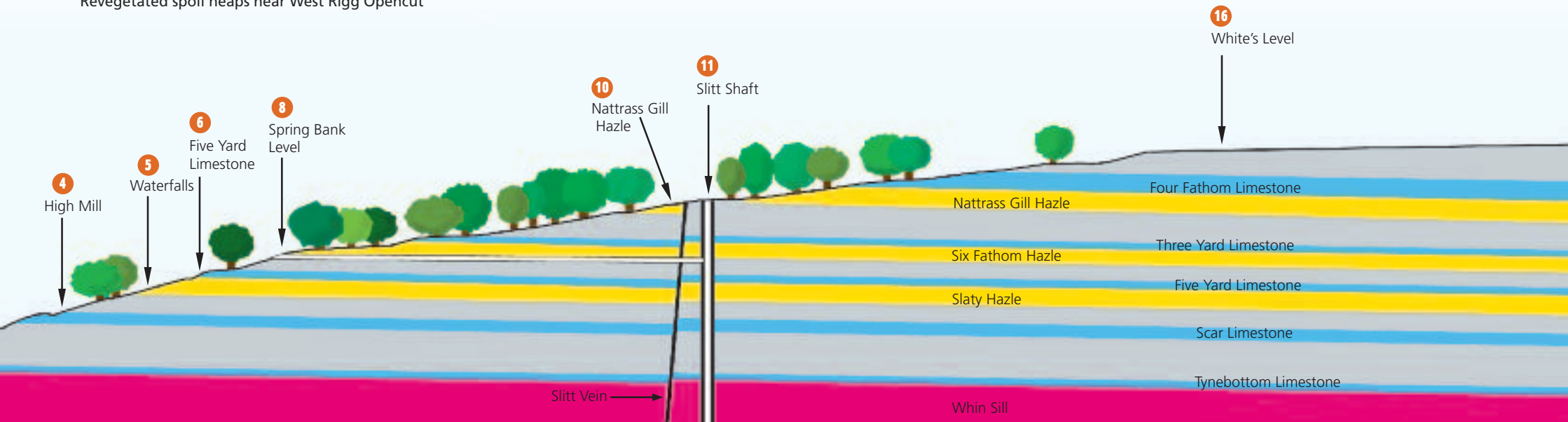
Redstart

One of the most noticeable features along the walk is a series of waterfalls, where the burn flows over step-like features in the rocks. The landscape is made up of repeated layers of limestone, sandstone and shale, known by geologists as 'cyclothem'. These rocks wear away at different rates resulting in the step-like profile of many hillsides, and the waterfalls along the streams.

For centuries, long before geology was a recognised science, miners and quarrymen recognised the different rock layers and gave them individual names. Limestones were often named after their thickness, measured in yards or fathoms, or from some other notable feature. Hazle (pronounced 'hezzle') was the miners' name for sandstone.



Allotments and spoil heaps in the landscape above Slitt Wood



Westgate

The village of Westgate developed just inside the 'West Gate' of Stanhope Park. The Prince Bishops of Durham enjoyed hunting and as the population of the dale began to expand, settlement, mining and farmland began to compete with hunting. To retain some of their hunting grounds, Bishop Robert of Lindisfarne and later Bishop Anthony Bek created a fallow deer park. Today the names of the villages of Eastgate and Westgate remind us of the position of two of the entrance gates into this medieval hunting park.



The walk starts at the centre of the village.

Walk west along the main road and turn right just before the Primitive Methodist Chapel. This is one of the best preserved examples of its kind in the north and is now managed by the Historic Chapels Trust. Walk up the footpath, forking right at the houses. The footpath soon follows the west side of the stream.

- 1 The rock in the stream just before, and immediately beneath, the footbridge, is the Scar Limestone. Being a rather hard rock this often forms 'scars' on some North Pennine hillsides, or as here, low waterfalls where it is crossed by streams.

Fork left after crossing the footbridge and you will come to an open area of the village known as Hightown.

- 2 This building was originally the Barrington School. Bishop Barrington built a number of schools in Weardale in the early 19th century because of a genuine interest in education and also because of concern that Methodism was taking too strong a hold in the dales.

- 3 This was the Wesleyan Methodist Chapel, Sunday School Room and caretaker's house (right). It has been converted into houses. Its size demonstrates not only the strength of the Methodist movement locally but also the size of the population that once lived and worked in this area.



To the left of the old Wesleyan Methodist Chapel is a footpath – follow this path past High Mill then follow the route keeping the burn on your left.

- 4 Once you pass High Mill, (one of two corn mills originally situated in the village – the other was on the main road) and go through the kissing gate, you enter Slitt Wood. This is predominantly an ash/wych elm woodland with an understorey of hazel and also alder in wetter areas. The plants here include dog's mercury, wood sanicle, sweet woodruff and ramsons, with globeflower, great bellflower and marsh hawk's-beard common in open spaces.



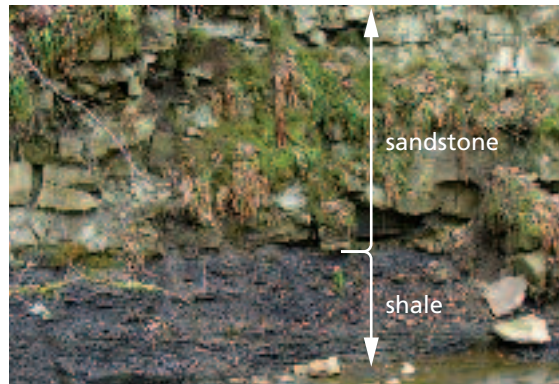
- 5 This is the first in a series of waterfalls; here the water flows over a sandstone outcrop. You'll perhaps notice the rather 'slabby' appearance of the rock. Because this sandstone often splits easily to give thin slabs suitable for covering roofs (including those seen on nearby buildings), the miners named it the 'Slaty Hazle'.

Globeflower (top)
Ramsons (above)

- 6 Here the Five Yard Limestone forms a series of low waterfalls. Notice the way the limestone typically breaks into large almost square blocks along vertical joints in the rock (below). The river is gradually eroding the limestone along these joints, leaving large broken pieces in the stream. A strong flow of water along the sloping bank to the right of the path marks the position of Spring Bank Level, a tunnel driven north beneath the valley to drain the upper workings of Slitt Mine (see diagram on pages 4 and 5).



- 7 At a bend in the burn, look out for exposures of the dark grey shales (known by the miners as 'plate') in the stream bank opposite the path. These are overlain by sandstones.



- 8 The name Spring Bank may refer to a natural spring found here or to the traditional practice of coppicing. Trees here were coppiced (cut right back to the ground to encourage new bushy growth to spring from that point). The cuttings from the trees may have been used as fuel for smelting lead and iron in medieval or Elizabethan times.

- 9 Shortly after you cross the next footbridge, a flat rocky surface by the streamside is an exposure of the hard sandstone known by the miners as the Six Fathom Hazle (right). Miners measured in fathoms (one fathom = 1.8m).



- 10 Look to the opposite bank of the burn. Here the base of the beds of sandstone at the top of the bank cut into the shales underneath, tracing the form of river channels when these were soft sediments about 320 million years ago. This sand was deposited in a vast delta which covered the whole of what is today northern England. This sandstone was known by miners as the Nattrass Gill Hazle.



As you walk along the path, look out for blocks of sandstone which show fossilised ripples, formed in soft sand as it accumulated underwater

- 11 Through the gate, the area ahead of you is Slitt Mine, which worked lead ore from the Slitt Vein, the longest known single vein in the North Pennines.

The first part of the mine you'll pass, on the right, is the remains of two sets of bousesteems. Here the partnerships of miners stored their bouse (unprocessed ore from the mine) until it went through the washing process to separate out the lead ore. As each partnership was paid not for the amount mined but for its lead ore content it was important to store each partnership's bouse separately before washing.



Bousesteems

Washing was done on the flat area which still has very little growing on it. In the middle of the 19th century this would have been a very busy scene. A visit to Killhope Museum will help you understand what a washing floor looked like.



Site of washing floor

Because space was limited, the mine stonemasons built an extraordinary flat arch over the stream (below) to give more working area. You can see this to the right a little further on. You have to admire their skill and wonder how it stays up!



To the right of the arch is a footpath which you can follow to come out on the road near West Rigg if you want to shorten the walk. If you do, follow the text from page 18.

When you face the arch, to your left there is a wheel pit where a water wheel turned to work the mine pumps. To the right is a stone structure built with massive sandstone blocks; this was where a hydraulic engine stood to work the shaft winding gear. You have to imagine many structures here which have now vanished, such as wooden headgear over the shaft.



The mine was worked from a level (the entrance to which has disappeared) and also from one of the deepest shafts in Weardale – 580 feet (177m) deep. **Please keep well clear of old shafts!** The level, which was a tunnel driven horizontally into the hillside to follow the vein, ran for several miles underground and connected to other mines further west along the vein. It was possible to go underground here and to come out three miles further up Weardale. Local legend has it that a miner wanted by the police evaded capture this way!

Throughout the area on lead mining waste you can find the metallophyte (heavy metal tolerant) spring sandwort, easily recognisable in spring or early summer by its star-like white flowers on bright green mossy leaves.



Spring sandwort

- 12 This gully marks the position of Slitt Vein. Later in the walk you will be able to see the vein exposed in the West Rigg Opencut. Veins are wall-like bodies of mineral that occupy roughly vertical cracks that cut through the limestones, shales and sandstones.



Opencast working on Slitt vein

Continue up the burn, keeping it on your left.

- 13 On the right of the path there are crags of a grey rock. This is the Four Fathom Limestone. The limestone takes its name from its typical thickness. The limestone is about 7m (or 'four fathoms') thick here.
- 14 Further up the path you'll see remnants of the washing floor at Middlehope Shield, which has been washed away by the stream. The stream here was controlled by the miners but it is gradually reverting to its old course. Here there was a waterwheel to drive crushing rollers, which crushed bouse from several mines in the valley.

© Beamish Museum Limited



Middlehope Shield, c1905, and (right) the same view today.



- 15 Here you can see what originally were reservoirs. We don't fully understand the complexities of the water supply system for the waterwheels in this valley. We do know that Middlehope Shield washing floor sometimes ran out of water. When White's Level was closed in the 1860s, a dam was built in the mine, so the whole mine became a reservoir supplying water to the waterwheels. Now that the reservoirs are beginning to silt up they provide ideal habitats for common sedge, sharp-flowered rush, water mint and bog pondweed. The most impressive sight is the large number of common spotted and northern marsh orchids that can be seen nearby in early summer.

- 16 This is the entrance to White's Level (right). This mine entrance is typical of those found all over the North Pennines. It gave access to several veins in what was a reasonably prosperous mine. Driving levels involved the removal to the surface of large amounts of rock, so it was necessary to keep the tunnels to the minimum practical size. This usually meant being high enough for the ponies used for haulage.



- 17 WB Lead and the Weardale Iron Company were both mining different minerals from the same veins. They had an agreement that they would transfer lead ore and iron ore to each other. This was done by means of a stone chute from the railway, which can just be seen almost above the entrance to White's Level. You can imagine that this agreement was open to a certain amount of abuse!



Dippers have been seen nesting in the White's Level mine entrance



Go over the stile and then continue up the valley towards a track that leads to the right (bounded by a dry stone wall), passing the bridge abutments that carried the mineral railway.

18 Ahead is the gated entrance to yet another mine. This is the Governor and Company's Level, so named because it was once worked by the 'Governor and Company for Smelting Down Lead with Pit Coal and Sea Coal' – better known as the London Lead Company. In 1847 the mine was taken over by WB Lead who worked it in conjunction with the other mines in the valley. Later still, in the 1880s, the mine was worked by the Weardale Iron Company, for iron rather than for lead. You can see iron minerals, easily recognised by their rusty-brown colour and heavy weight, in the piles of rocks lying outside the mine. Later attempts to work this mine for fluorspar were unsuccessful.

Turn right along the track and then right through the gate at the end.



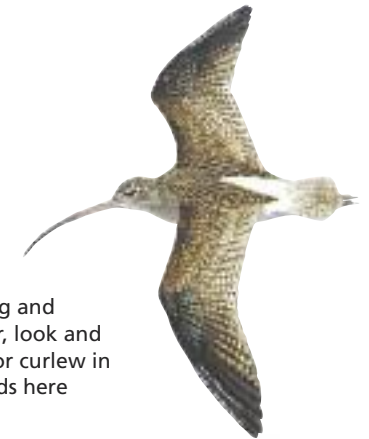
Entrance to the Governor and Company's Level

19 Until around 200 years ago all the land around you here was a wide sweep of unimproved moorland, unenclosed by the stone walls we see today. Farmers living in the valley below had grazing rights or 'stints' to graze their animals on the open hillsides. Then, as in many parts of upland Britain, this land was divided up amongst the stint holders by Act of Parliament. The Enclosure Acts divided the landscape into fields, with farmers receiving land in proportion to the stints they previously held. Farmers had to build their own walls to enclose their fields (or 'allotments' as they were called), and were then free to improve them through drainage and the addition of fertiliser and lime.

Almost all the walls and buildings were made of local sandstone. Today, many of these allotments are once again reverting to boggy and less productive ground, which is a haven for ground-nesting wading birds such as lapwing, curlew and snipe. The Enclosure Acts also laid out a network of new tracks across the land, giving access to the individual fields. You are walking along one of these enclosure roads. Enclosure landscapes can often be identified by the regular shape of the fields and the straight wide tracks such as this one.

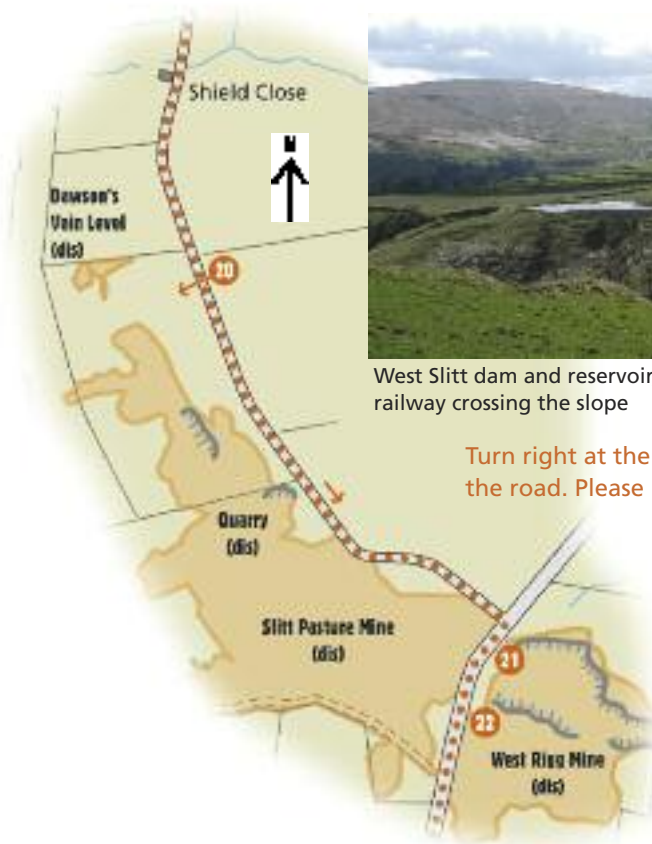


Looking back at the allotments from point 19



In spring and summer, look and listen for curlew in the fields here

20 During the 19th century a network of mineral railway lines existed in this area largely for the purpose of transporting iron ore mined here. The terminus of one such line was at Middle Slitt Level just up the hillside on the other side of the burn. If you look carefully you can still see the line of the railway crossing and gradually descending the slope. You can now also see West Slitt dam perched high above the Slitt Mine on the opposite side of the Middlehope valley. This reservoir was built in 1861 to hold a water supply for the new hydraulic engine at Slitt Mine. A covered watercourse brought water into the dam from streams and other watercourses several miles further up Weardale. The water from the dam was carried down the hill in a cast iron pipe to feed the engine in the valley below.



West Slitt dam and reservoir, with the line of the former railway crossing the slope

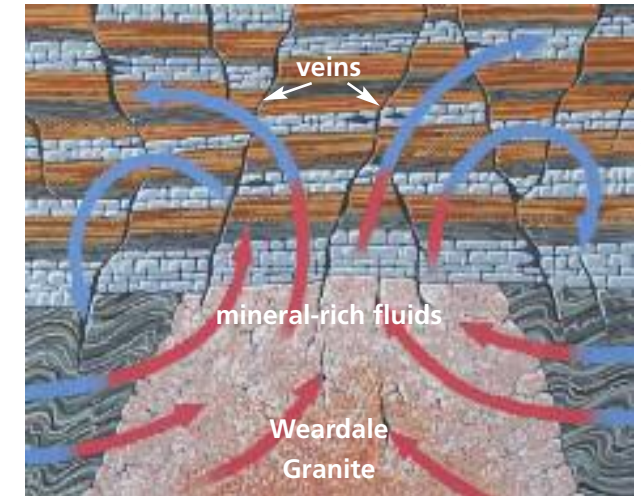
Turn right at the end of the track and follow the road. Please be watchful for traffic.

21 West Rigg opencut is a disused ironstone quarry where large iron ore deposits in the Great Limestone, adjacent to the Slitt Vein, were worked. Slitt Vein, which here consists mainly of quartz and a little fluorite, is the prominent wide rib of rock in the centre of the quarry. In its centre you can see narrow slits, or 'stopes', from which earlier miners attempted to work lead ore. These workings, which pre-date the iron ore workings, were accessed from levels driven into the vein from positions west of the road.



West Rigg Opencut

The iron ores at West Rigg were formed when warm mineral-rich fluids flowing along what is now Slitt Vein leaked into the adjoining limestone. The fluids, which were rich in iron, reacted with the limestone to form deposits of iron ore. Geologists and miners use the term 'flat' for these roughly horizontal deposits beside a vein. Later mineral-rich fluids flowing through the vein deposited mainly quartz with smaller amounts of fluorite and only very small amounts of galena (lead ore).



How minerals formed in the North Pennines



Fluorite from White's Level

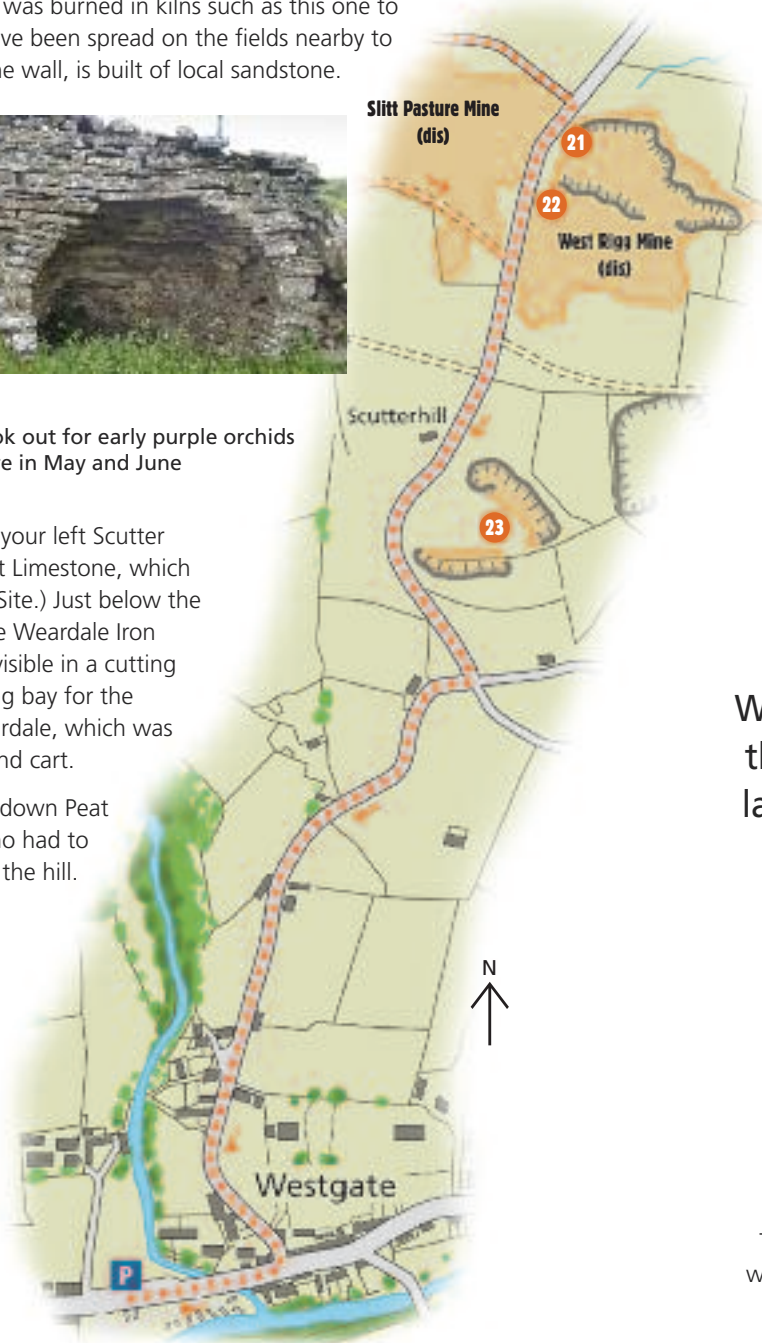
22 A little further along the road you'll see the remains of a limekiln (below) in the dry stone wall. Limestone was burned in kilns such as this one to make lime which would then have been spread on the fields nearby to improve the soil. The kiln, like the wall, is built of local sandstone.



Look out for early purple orchids here in May and June

23 Further on still, you will pass on your left Scutter Hill Quarry (a quarry in the Great Limestone, which is designated a County Wildlife Site.) Just below the quarry you cross the route of the Weardale Iron Company's mineral line, clearly visible in a cutting to your left. Here was the loading bay for the ironstone mined further up Weardale, which was brought to this point by horse and cart.

As you descend the steep slope down Peat Hill, think of the poor horses who had to drag loaded carts of iron ore up the hill.



We can provide a summary of the information contained in this publication in large print, different formats and other languages on request. Please call 01388 528801 for details.



The North Pennines AONB Partnership holds a Gold GTBS Award for their offices and tourism activities.

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To find out more about how a mine like this might have operated and how the miners would have lived and worked, visit Killhope, the North of England Lead Mining Museum. www.killhope.org.uk



Looking down into Westgate

Slitt Wood and West Rigg Geotrail

A 3 mile walk in dramatic Weardale

Follow the footpath up the valley of the Middlehope Burn, through a North Pennine dale in miniature. You'll travel back 320 million years to a time when what is now the North Pennines was on the equator, periodically covered by shallow tropical seas, vast deltas and lush rainforests. You'll visit some of the area's mineral deposits and see how working these deposits has shaped our landscape.

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