

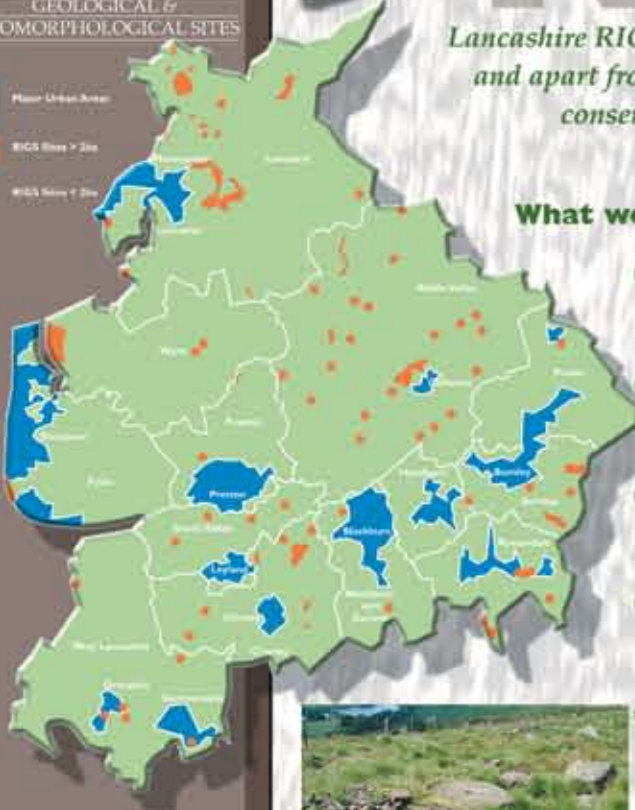
LANCASHIRE RIGS



Lancashire RIGS Group was formed in 1991 and apart from Natural England is the only conservation organisation to focus on local geology and scenery.

What we have done since then:-

- 1 Identified, surveyed and recorded over 100 RIGS and many other sites
- 2 Worked with local authorities to improve site protection
- 3 Raised public awareness of geoconservation through our website
- 4 Produced interpretation boards about the geology and scenery of Lancashire
- 5 Published geology trail booklets to guide you in areas of particular interest



Abandoned Millstones
Black Coppice

WHAT ARE RIGS?

Regionally Important Geological and Geomorphological Sites are among the best places to see the geology and scenery of Lancashire. Over 100 sites exist across the county. Together they show much of the geological history of NW England and how rocks, rivers and ice sheets have helped to shape the landscape we can see and value today.

JUMBLES COUNTRY PARK

WEST PENNINE MOORS



To get to Jumbles Country Park...

By Bus – Service number 563 hourly between Bolton and Edgworth
Service number 273 hourly between Bolton and Rawtenstall via Hawkshaw

By Train – The nearest station is at Bromley Cross on the Bolton and Blackburn line

By Road – From Bolton town centre, take the A676 towards Rawtenstall. Approximately 1.5 miles past Bradshaw village (junction with B6196), turn left down to the Jumbles Country Park car park.

From Bury, take the A58 towards Bolton then right on to the B6196 through Ainsworth and then to Bradshaw where it joins the A676. From there, follow the directions as from Bolton.

You will need boots, waterproofs and OS Explorer map 287 to follow this route. The information in this guide may not be sufficient for detailed navigation. Allow 2 – 3 hours excluding stops. Distance: approx. 5 miles.

Lancashire RIGS Group welcomes enquires regarding membership and all aspects of its work. More information is available on our web site at www.lancshirerigs.org.uk or you may contact The Secretary on 01254 830655 or e-mail info@lancshirerigs.org.uk.
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JUMBLES COUNTRY PARK

WEST PENNINE MOORS



Lancashire RIGS Group



A LANDSCAPE TRAIL GUIDE



GEO CONSERVATION



www.lancshirerigs.org.uk

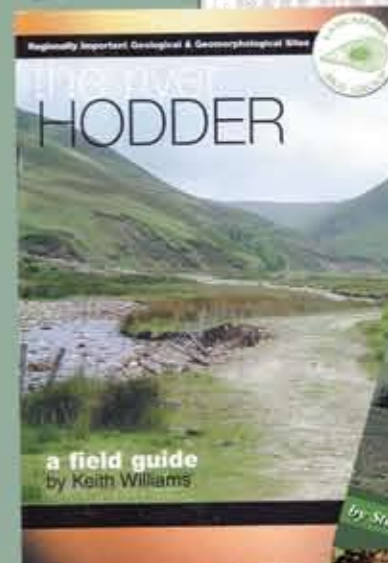
Publications

The River Hodder Field Guide

This guide explores a number of sites in the Upper Hodder catchment which demonstrate how the river valley has and continues to change. It draws on a number of recent research projects presenting their findings in straightforward language with many maps, diagrams and photographs.

The White Coppice Guide

This guide explores the geological features along Dean Brook at White Coppice, Chorley. It will be of interest to anyone wishing to find out more about the rocks, lead mining and quarrying of this part of the West Pennine Moors.



a field guide
by Keith Williams



GEOLOGICAL TRAIL GUIDE

Denham Hill Quarry

Near Brindle, Chorley occupies a commanding position overlooking the West Lancashire Plain. The views alone in clear conditions extend from the Lake District to Snowdonia and attract many visitors.

The interpretation board was erected in 2000 as part of a major refurbishment scheme implemented by Chorley Borough and Brindle Parish Councils, the local Groundwork Trust and the RIGS Group.

White Coppice

Is a popular beauty spot near Chorley on the edge of the moors. Few visitors, however, know about its interesting geology, which is why the RIGS Group produced a trail guide and interpretation board.

Walking up the stream, visitors may see sections through river channels in a 380 million year old delta, faulting, minerals and the remains of 19th Century leadmining.





Location 1 Jumbles Quarry

SD734 149

Fossil Tree and Delta Channel

Exposed in the rock face in front of the viewing platform is a 2m section through a tree trunk which was fossilised in the position where it grew. This is comparatively rare and suggests that the tree was inundated by very rapid deposition of sediments.

The tree was a *Calamites* - related to the present-day horsetails which can be found growing around the reservoir. These trees grew to a height of 30 – 40m in forested swamps which 320 million years ago were located in a huge river delta near the equator. If you look carefully down the edge of the fossil you can see that the bark has been carbonised or turned into a very thin coal seam! Fossilised bark and leaves from both types of tree are fairly common in the Carboniferous sandstone rocks of Lancashire. Look out for them especially in the beds of moorland streams.

Deltas are often criss-crossed by many temporary river channels and part of one of these can be made out in the rock face seen from by the interpretation board on the main path which you pass on the way to the next location. The side of the channel is marked by a shallow down-curving crack at the right hand end of the quarry face.

Route

From Jumbles car park follow the main path north to the concrete bridge. Cross this then at the bottom of the steps head right through a gate in the fence on a track which takes you to a viewing platform. Retrace your steps back to the main path on the other side of the bridge then turn left towards the top of the reservoir. After about 300m you will pass the entrance to a water supply site on the left and a little further on a small tributary joins the main stream from the right. There is no path up this stream but you can explore it as far as you feel comfortable.



150 yards to join the bridle track at grid reference SD 738155. This track leads through Birches Farm to Bury Road and the dam of Walves Reservoir.

Location 2 Jumbles Brook

SD738 151

Fault-controlled Valley and Ochre Spring

The first thing that you will notice is the bright orange pollution in the little stream just off the main path. The orange colour is due to iron oxides being present in the water which is probably draining from old coal mine workings containing iron pyrite ('fools gold').

The iron in the pyrites combines with oxygen to produce yellow ochre and also releases sulphuric acid which in turn may liberates other metals. These combine to produce a cocktail of pollutants so while the water itself looks clean enough, the stream is virtually devoid of any life.

If you explore further up the little valley, you will notice that the right hand wall becomes increasingly steep with a consistent angle above 70 degrees. Also, you can see on the right smooth slabs with parallel vertical scratches called slickensides. In the stream bed particularly there are areas of bedrock and detached blocks which are made of shattered fragments cemented together which geologists term 'breccia'. All of this tells us that this is a fault where rock on one side of the stream has moved in relation to the other. Some of the rock along the fault became smashed up – the breccia – and so was easily eroded by the stream to produce this steep-sided valley. Also, if you look carefully at the map you will see that the fault also controls the line of the upstream section of Bradshaw Brook which swings sharply NW at this point.

Freshwater mussel (*Carbonicola*) fossils and coal seams have also been reported at this location.



Route

Follow the farm track across the dam up to Quarlton Fold Farm. Bear right between the farm buildings, through a steel gate and into the field beyond. Proceeding in the same direction, locate and keep to the left of a wire fence which changes to a stone wall. With the wall on your right, follow it to the woods where the path continues down to a wide access track. Turn right along this following it down to the road (A676).

Turn right (west) and after 100m a footpath leaves the road across very wet ground then steeply up the slope to the south. Follow this up to the farm buildings then right in front of cottages along the access track to the Tottington road. Cross the road, pass between gate posts with 'Knowles' carved on them, then through a gap in high walls to pick up the footpath on the other side which will take you over the low ridge to the Affetside road.

Location 3 Walves Reservoir

SD747 153

One of many Meltwater Channels

This reservoir occupies a channel that was cut by meltwater produced when the last ice sheet melted about 15,000 years ago. The meltwater flowed east from the Bradshaw valley to the Tottington valley and may have been underneath, within, or initially at least, on top of the ice.

Meltwater channels can be very varied but typically they have steep sides, wide, flat bottoms and are rarely related to the present-day river system. This one is unusually sinuous. They are often associated with significant deposits of sand and gravel which was dumped by the meltwater as its level rose and fell. These deposits in turn favour plants which like free-draining soils such as gorse and broom while the poorly-drained channel beds are often covered with rushes.

The channel's current use as a reservoir may give you some idea of what it may have looked like when full of meltwater though instead of still water there would have been a swiftly flowing torrent and a landscape like northern Iceland today!

There are many major meltwater channels on the western and southern flanks of the West Pennine Moors the biggest of which extends from the outskirts of Blackburn to the north of Bolton. This is now occupied by the Rivington reservoirs which when viewed from the moors above also gives a good idea what these huge meltwater rivers looked like 15,000 years ago.



General views across the Rossendale Moors and Cheshire Gap

The first thing to note is how the hill sides have stepped sides and flat summits. These steps reflect the alternating horizontal beds of soft and hard rocks. The steep sections of hillside are outcrops of strong sandstones while the weaker shales form the flat terraces.

The whole area was covered with ice 18,000 years ago during the last glaciation. This was probably thin on the hill tops and formed from local snowfall. The main ice came down the Irish Sea and flowed through the N to S valleys of Bradshaw Brook and the Irwell. Look for notches in the skyline to the N and NW where ice (and later, meltwater) cut down into bedrock at Cadshaw. East of the Irwell valley at Nangreaves, meltwater from the decaying icesheet cut deep channels through the ridge into the Cheeseden valley. The meltwater flowed south towards Bury then east into Walsden Gorge NE of Rochdale. Finally it flowed into the Yorkshire Calder and the North Sea, which was ice-free.

To the south lies the lowland of the Cheshire Gap. This whole area is now low-lying partly because the rocks are faulted and dip to form a shallow down-fold or syncline. Also, the Coal Measures and Triassic sandstones which underlie this area have been less able to resist erosion over the millions of years since they became exposed to the elements. In clear weather you can see the Clwydian Hills of N Wales on the other side of the Gap.



Location 4 Affetside

SD747 153

Route

The footpath starts in the overgrown uphill corner of the lay-by following the old hedge initially before crossing the boggy open field, to the A676. Cross the road, keeping the field boundary on your right, past a gnarled oak tree on a corner, until you reach the Walsh Fold Farm track. Turn right towards the farm and follow the right of way between the farm buildings emerging in the field on the west side. Bear right across the field (waymarked) towards the top of the woods then through the woods to the main track alongside of the reservoir. Turn left along the main path back to the visitor centre and car park.