Huddersfield Geology Group

Local Field Trip Guide – Hade Edge Flagstone Quarries

Introduction

Flag stones were quarried across many parts of West Yorkshire and surrounding locations, exploiting the local geology. Historically, flag stones would have been quarried, dressed to size and used close to where they were required. Building stones and flags are still extracted today, though the industry is now based around large commercial quarries. Uses include roofing, pavement flags and railway platforms.

Flag stones are formed in a shallow, active delta environment. Changes in flow direction and sedimentation left weakened surfaces between layers. The resultant rock would fracture more easily along these surfaces. The type of sediment is also a key factor. Sediments with an abundance of thin, plate-like, minerals such as mica, produce a rock type that splits more easily along the plane of mica crystals.

Flag stones are often formed where there is cross bedding. This occurs where deposition of material, later to become hard rock, is at an angle. The deposition moves laterally to form the features as in Picture 1.

Picture 1. Cross bedding, in the yellow sandstones.

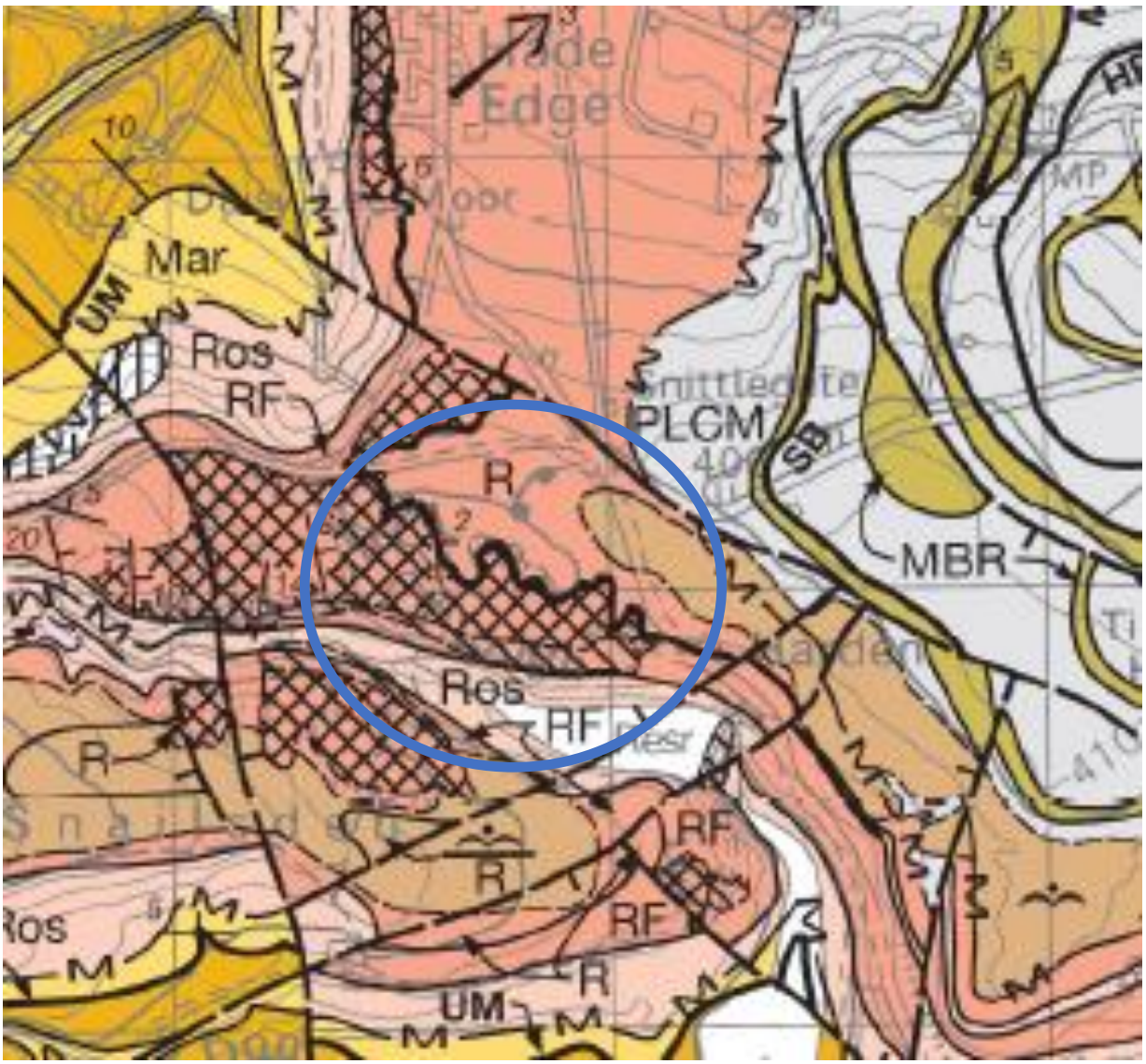
Extracting flag stones from the ground can be very easy compared to other quarrying and mining activities. In places, flagstones can still be seen in situ at ground level and in shallow depressions, as in picture 2. Note heather bushes for scale:

Picture 2.

Flags of varying thicknesses can be seen and would require no further work after extraction, other than trimming to size and shape.

Geology Map

This is the geology map of the area:



This extract from the 1:50,000 geology map of the area shows:

1. The area covered by the walk, within the blue oval.
2. Hade Edge at the top (north) of the map
3. The quarried areas as a black cross hatch – *'infilled ground: restored opencast coal sites, sandstone quarries, sand, gravel and clay pits'.*
4. Thick black line – exposed coal seam
5. RF- Rough Rock Flags – the target for the quarries.
6. Key:
    a. R -Rough Rock
    b. RF – Rough Rock Flags
    c. Ros – Rossendale Formation

Route and Locations

The area to the south of Hade Edge has extensive abandoned quarry workings. The most significant workings are to the south of Bare Bones Road and extend south to Harden Clough and up onto the open moors of Lower Snailsden Moss.

This guide covers the outcropping quarry faces running approximately south east to north west across the area, starting from Dunford Road. It follows the sinuous coal outcrop visible on the geology map.

A photograph is provided for each location, taken from the given grid reference, in the direction stated. Eight figure grid references are provided, so to the nearest ten metres.

Each location is also identified by a 'what3words' code ©, in the format: ///word1.word2.word3. All photographs are taken from a path or track. Walking away from the paths and tracks may be hazardous. Inclusion of a photograph in no way implies that the outcrop is safe to examine close up.

Start Point and Parking

There is ample roadside parking along Bare Bones Road to the north of the main site, and off Dunford Road at the south east corner of the site. The walk can be started from either location as the same total distance will have to be covered. Picture 3 below is a general picture of the quarry area to south on Lower Snailsden Moor.

Picture 3. General View to the South.

This shows spoil heaps, now overgrown as grassy heather-covered mounds.

Disclaimer

Those using this guide do so entirely at their own risk. The information is correct at time of publication, January 2021.

Locations described and photographed in this guide are just a selection of many similar outcrops in the area. Their inclusion in no way implies that they are safe to approach.

Feature and Location

This is Location 1, close to the car park on Dunford Road. Grid reference: SE15050391, looking north east. W3W: ///cross.groups.pacifist. It is an outcrop facing south west.

The outcrop is mainly of 'massive' rock, meaning it has no bedding. However, it tends to finer bedding and flags towards to top. The rock has jointing at right angles to the presented face; the face is probably exposed due to a joint (line of weakness) at that orientation. There is a prominent undercut at the base. This is where the coal seam has weathered back as it is much softer than the overlying rock. The coal lies on shales which form the sloping, grassy apron to the front of the exposure. There is no evidence of quarrying, such as drill cores and tool marks.

What Next?

Location 1 to 2 is 120 metres. Follow a path through the heather at approx. 310° true. Cross a track, keeping a wooden post on your right. Continue into a depression between rising ground. Location 2 is to your right (North).

Feature and Location

Location 2 is at grid reference: SE14940396, looking north. W3W: ///cracker.spines.grunt. It has many similarities to location 1: an outcrop of massive sandstone, with jointing at right angles to the exposed face. The base is abruptly weathered back along the coal seam, again with an apron of shale. The shale is clearly visible in the foreground and has a fossil, possibly of a tree root, visible from the camera point.

What Next?

Location 3 is 60 metres to the north east. Retrace your steps back to the post by the track. Turn left and go up a short orange-coloured stony bank to the upper track. Follow this round to the left heading west for 10 metres, then turn sharp right onto a track on bedrock.

Feature and Location

Location 3 lies on the track across the bed rock. Grid reference: SE14980401, W3W: ///flamed.silence.producers. These pictures are looking approx. south west, across a bedding plane of exposed rock.

There are several fossils, at a cm scale. These are fossilised trees, showing the bark and other structures. The track surface also shows exposed arc-shaped ripples of rock. These represent different phases of deposition in what must have been a low-energy environment, to preserve such fine details. There is also evidence of jointing – long straight closed cracks running through the rocks.

Coal can considered as fossilised wood and plants that have decayed and been subject to heating and compression. Coal is made from an accumulation of materials over many years. These fossils, however, are from a single tree or trees, possibly swept along onto a sandbank in a storm, where it has been buried and fossilised.

What Next?

The next location, no. 4, is 160 metres away. Head west along a good track over exposed bedding. There is a short uphill section followed by a gentle descent to the south west on what appears to be a raised causeway. This was possibly a rail track for removing flag stones. You will arrive at a 5-way track junction, clearly visible on the overhead view in the what3words application. Follow a narrow path north through the heather to location 4. This is on a promontory, with a depression to your east round to north.

Feature and Location

Location 4 is a series of exposures facing north, through west to south. Grid reference: SE14820398, looking north in the photograph. W3W: ///nagging.upgrading.ridiculed. The camera position is on a broad promontory, reached from a manmade causeway. This location is more complex than the others. The photograph shows a band of orange sandstone between coarser gritstones. Cross bedding is clearly visible, indicating a shifting depositional environment. Scan the whole exposure from right (south) to left (north) and observe how the cross bedding is mainly top right to bottom left. However, in places it reverses. These are ideal conditions for the formation of flagstones. Indeed, there is evidence of rocks spalling away from their host bedding, saving the quarrymen a lot of work!

The coal seam is not visible, though it may lie at the back of the heavily weathered horizontal features to the east.

What Next?

The final location is approx. 320 metres to the north west. Follow paths through the heather, heading north west, to the main track. Follow this, still heading approx. north west. Observe a long, low outcrop to your right. The track bends to the west then north. Observe deep pits to your left, west. When safe to do so, drop down onto a steep but safe path to your left and head west to location 5. This is approx. 100 metres south of Bare Bones Road.

Feature and Location

The final guided location, No. 5, is a long exposure mainly facing south.

Grid reference: SE14550417, looking north. W3W: ///dating.tightrope.motivates. This picture was taken from a broad, flat bottomed depression looking across a dip in the ground. There is a grassy apron rising from the dip, a discontinuous bed of orange sandstone, capped by a more massive deposit and then flag stones.

That concludes the illustrated part of this guide, but don’t stop now!

What Next? Explore at will

As you progressed from Location 1 to 5, you should have identified common features in the landscape and underlying geology. These are:

1. Low angled grassy aprons of shale, with the shale exposed in some places.
2. The thin coal seam, weathered back below sandstone.
3. Beds of orange sandstone, often weathered back and crumbling away.
4. More massive beds of rock, harder and less prone to weathering.
5. Flagstones, sometimes horizontal, sometimes at shallow angles due to cross beading.

Location 3 is the exception. Here, you were stood on top of the more resistant rock formations. Fossils were clearly visible, and the sedimentary and jointed structure of the rock could be seen. This structure provides clues to the origin of the overlying flagstones.

After location 5 it is suggested you walk back towards location 4. Make further observations based on the summarising comments above, and see if you can pick out any of the following features:

1. Low angled grassy aprons
2. Exposed shale
3. Softer shale and coal, weathered back below harder rocks
4. Crumbly orange sandstones
5. More resistant sandstones
6. Cross bedding and flagstones
7. Jointing, at right angles to the main exposure (this may result in a stepped profile when seen from above)

Compare these observations with what you can see in the shallow pits dispersed around the northern and western edges of the site. Here, flag stones can be easily extracted by hand without exposing the underlying bedrock, shale and coal.

Additional Information:

Disclaimer

Those using this guide do so entirely at their own risk. The information is correct at time of publication, January 2021. The walk may take one to two hours or more depending on your level of interest in the surroundings.

Car Parking

There is ample roadside and off-road parking on Bare Bones Road (to the north) and Dunford Road (to the east).

Facilities

There are no facilities on site. There is a shop and pub in Hade Edge.

Public Transport

There is a South Kirklees bus service, No. 25, between Holmfirth and Penistone, calling at Hade Edge. Stotts Coaches provide a service between Hade Edge and Huddersfield, No. X7. There is also a service from Sheffield by TM Travel.

Access

All locations can be viewed from tracks and paths. The area is criss-crossed by tracks, paths and old causeways. Great care should be taken where vegetation covers the path, possibly concealing hidden clefts, steep slopes and quarry edges.

Follow the Country Code and remember that this area is used for a range of recreation purposes.

See: https://www.gov.uk/government/publications/the-countryside-code/countryside-code-full-online-version

Copyright:

Historical Data

(Pending)

Victorian Ordnance Survey 6 inch to 1 mile Old Map (1888-1913)