Huddersfield Geology Group

Local Field Trip Guide – Spring Watch

Introduction

Netherthong and the surrounding area have many examples of how water has been exploited, from natural springs to manmade irrigation. The Spring Watch field trip takes you to 8 locations, over about 3 miles, exhibiting a range of water supplies. The aim is to try and explain the origin of the water supply and link it, wherever possible, to the underlying geology and other natural features.

We all need water! Throughout history, we have depended on a supply of clean water for drinking, cooking and sanitation. Water is also required for arable and livestock farming. More recently, water has been exploited for industry, to support industrial processes and as a source of power. Before canals, pack horse and stagecoach routes required clean water for horses.

Hydrogeology

To understand how water can appear at the surface, a basic understanding of hydrogeology is required. Rainwater percolates down through topsoil and vegetation (the overburden) into the underlying rocks. Rocks have two key relevant properties:

1. Porosity. This is the capacity of a rock to hold water. Water is held in small spaces or fractures between grains within the rock
2. Permeability. This is a measure of how easily water can travel through the rock, either downwards, horizontally or, in some cases, upwards.

Water will also exploit weaknesses in the rocks such as faults, cracks and bedding planes, and the junction between rock types. If water is travelling from one layer of rock to a less permeable layer, then there will be a build-up of water; this build-up may be released as a spring.

The other key factor is the water table. As rainwater sinks into the ground, there is a saturated layer that is full of water. The top of this saturated layer, which varies with recent rainfall amounts, is known as the water table. If the water table intersects the surface of the ground, then water will appear as a spring, stream, river, or lake.

A detailed hydrogeology map is at the end of this guide.

Route

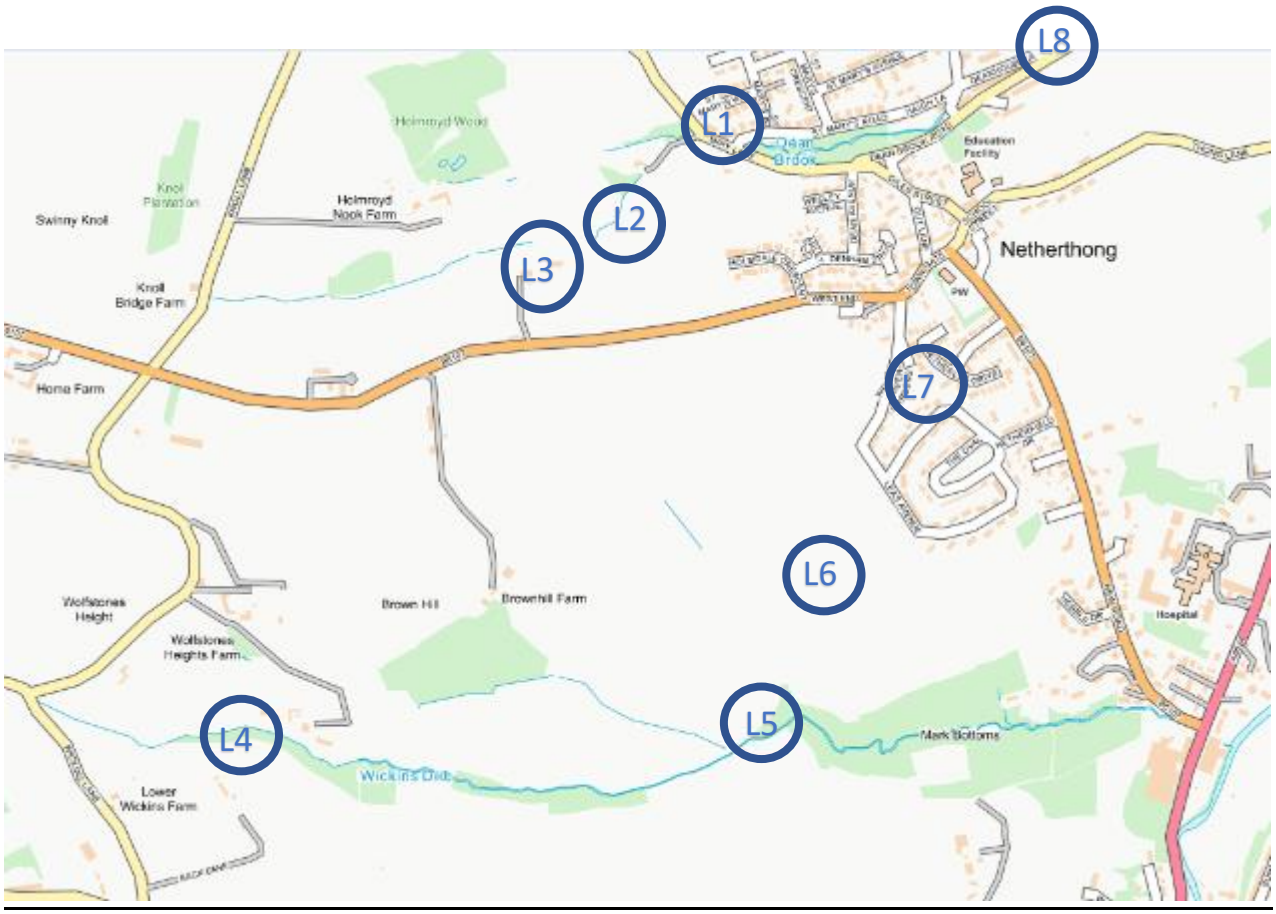
This map shows the locations on the walk. All except the outlier are on, or adjacent to, public roads and paths at the time of writing (January 2021).

A photograph is provided for each location. Six figure grid references are provided, so to the nearest one hundred metres.

Each location is also identified by a ‘what3words’ code ©, in the format: ///word1.word2.word3.

Follow the Country Code and remember that this is agricultural land and a range of grazing livestock or horses may be encountered.

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



Start Point and Parking

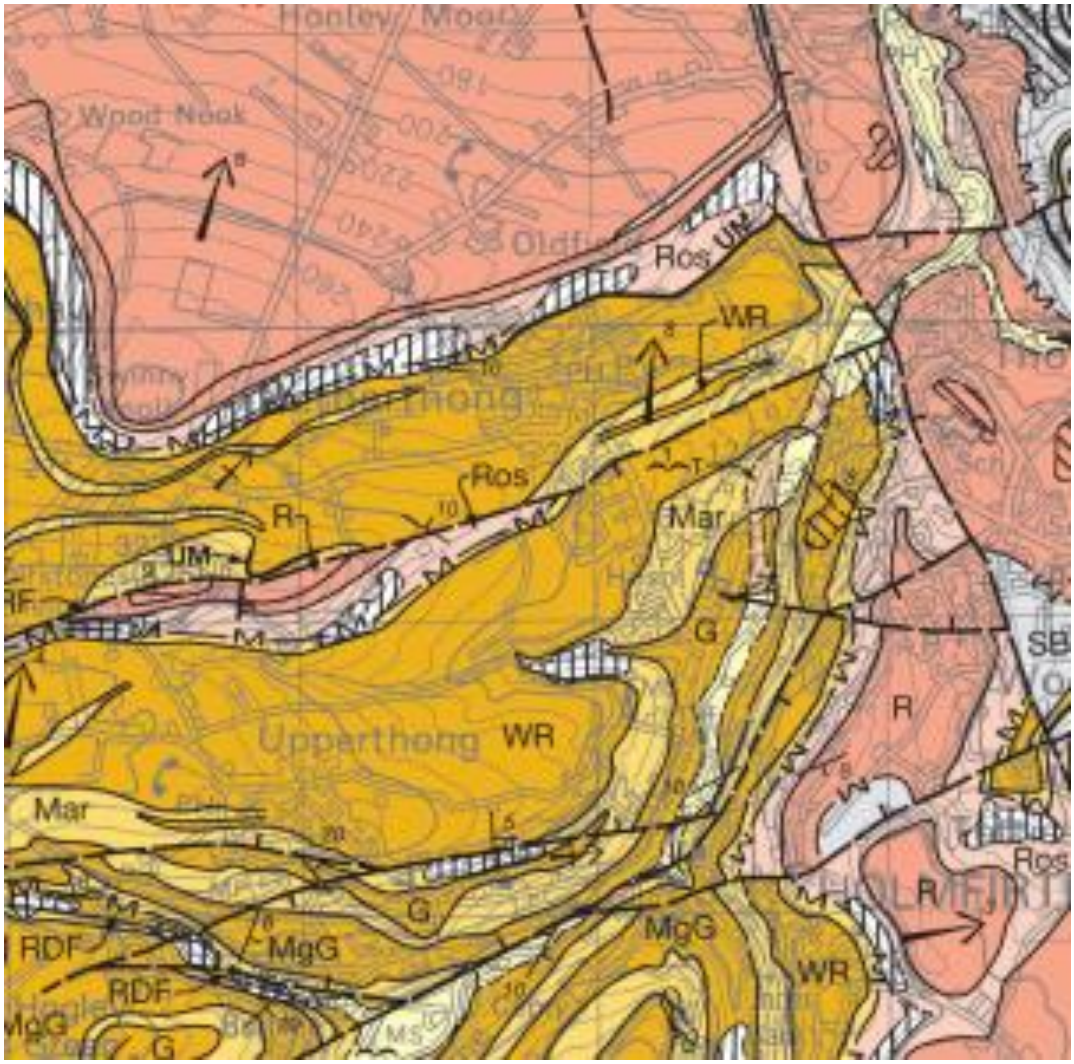
The village of Netherthong was designed for pack mules and the horse and cart! Parking is limited. The best option is roadside parking in the St Marys Estate, close to the first location on the proposed route. The circular walk will bring you back to your car. St Marys Estate is at approx. SE137099, Post Code HD9 3XW. There is also an outlying location to the east of Netherthong that you may wish to visit.

Disclaimer

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

Supporting Information

This map shows the geology of the area around Netherthong. All spring watch locations are on this map. An extract from the map is provided for each location.



The rock types of most interest are:

1. Rossendale Formation (Ros) – Mudstone and Siltstone.
2. Huddersfield White Rock (HWR or WR) – Sandstone.

The Rossendale Formation is likely to be less porous and permeable than the Huddersfield White Rock due to smaller grain size. Both are sedimentary bedrock formed approximately 313-314 million years ago in the carboniferous period. In places, the Upper Meltham coal measure (UMCM) outcrops between the two.

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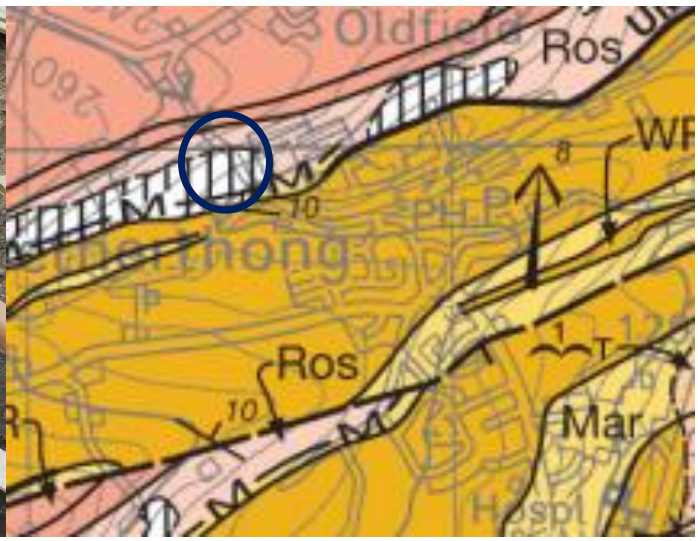
Feature and Location

This is Location 1. Grid reference: SE135098. what3words (w3w): ///upgrading.pipes.good. (Very strange coincidence!!). It is at the entrance to a new housing estate (2019) reached by turning right after going westwards out of St Mary's Road and walking uphill (on Miry Lane) for approximately 50 metres.

This picture shows the now concealed coal seam, taken when the facing wall was being constructed (July 2020). Prior to development there was no sign of a spring at this location. When the overburden and some rock was removed to create the access road, a spring appeared. The initial flow was substantial, and an external land drain was put in place, taking water back underground to a new main drain under the road. Since then, a facing wall has been constructed. The spring is just above the Upper Meltham Coal Measure (UMCM). The spring here is at the same level as several active and dormant springs in back gardens within the St Mary's Estate, which are also likely to be due to the same underlying geological conditions.



Possible Water Source

This spring and those in the St Marys Estate lie on, or close to, the Upper Meltham Coal Measure, between the Huddersfield White Rock and Rossendale Formations. Differences in permeability and the presence of the coal seam are probable causes of these springs. There is a zone of groundwater catchment up-slope of the springs. There is also evidence here of poorly sorted matrix above the 'coal' which is indicative of slumping (probably again due to slippage of soft clay/silt matrix as it gets saturated above the spring line).

What Next?

Return to the foot of the hill, Miry Lane. Follow the public footpath west. Continue past the old mill house until you emerge from tree cover. Cross the stream by a stone flag bridge (sometimes underwater!) and continue alongside the stream for about 50 metres. The stream then jinks left (south) from the path and under a fence. Location 2 is at the other side of the fence.

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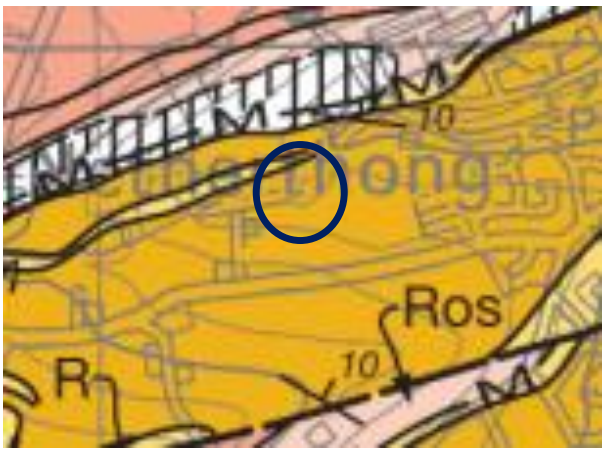
Feature and Location

This is Location 2. Grid reference: SE133096. w3w: ///drank.rabble.proud. The stream appears to originate in a free-flowing spring, surrounded by slabs of sandstone.



Possible Water Source

Flooding and footpath erosion have shown that the bedrock close to the stream is only about 30 cm below the path is places. The valley base and side are entirely within the Huddersfield White Rock. The source of the spring is therefore likely to be where the water table comes to the surface at the valley floor. Water in the overburden, and possible in the flanking Huddersfield White Rock, then emerges. The spring seems to originate at a single point so it may be controlled by localised jointing or fracturing. However, there are no obvious faults or unit boundaries on the map, so the intersection with the water table is probably the primary reason for the spring.

What Next?

Continue west along the footpath. Where the walled track turns sharp right, go over a stile on the left and continue west along the bottom edge of the field. Note the exposed bed rock in the stream bed. At the old dam, (shown as Holmroyd Reservoir on the old 1854 map, see link https://maps.nls.uk/view/102345091), go over a double stile into the field on the left. Continue west in a rising arc to the next location.

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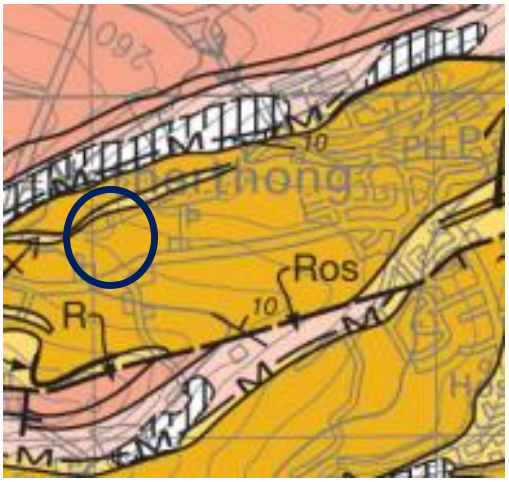
Feature and Location

This is Location 3. Grid reference: SE129095. w3w: ///rifled.openly.goods. Water emerges from beneath two large stone flags. The water may be fed by a land drain but there is no evidence for a man-made feed.



Possible Water Source

Field drains are common in the area. The source of this water is likely to be a field drain, tapping into water in the overburden in the fields above the bed of the valley. It has not eroded down to the stream below and its flow may therefore be intermittent. However, it may also be a local exposure of where the water table meets the surface. The overburden in the bed of the valley is very thin, such as at Location 2. Here, it is likely to be much thicker.

What Next?

Continue in an arc down to the bottom of the field and turn left (west) onto the path alongside the stream. Continue west alongside the stream looking out for natural and manmade sources of water, all adding to the volume of water in Dean Brook. At Knoll Lane, the stream runs through a culvert under the road. Note the marshy ground across the road to the west. Turn left, cross Moor Lane and climb up Wolfstones Road. Note evidence of quarrying (for flagstones) on Wolfstones Height, above you on the right.

Follow the road round and down for approx. 500 metres until above the farm with the horse training manège. Follow public footpath signs around the farmhouse and down, through gates, to the stream. Cross the stream by a flagstone bridge to the next location.

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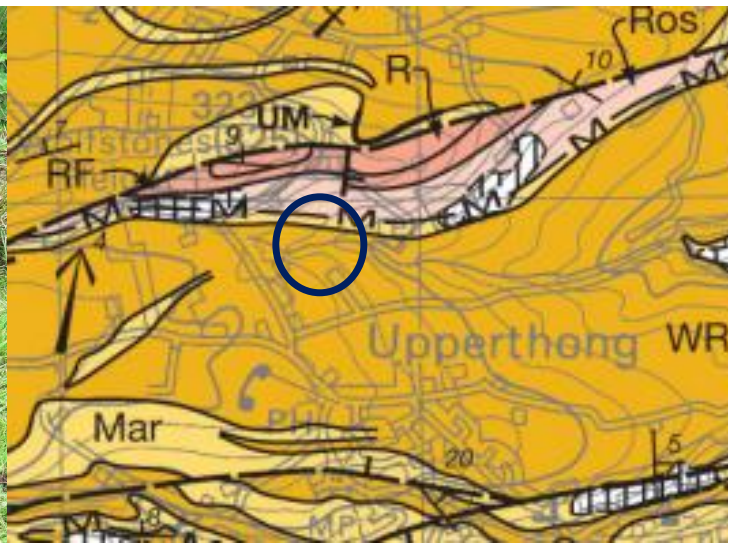
Feature and Location

Location 4 is a land drain feeding a large trough. Grid reference: SE126088. w3w: ///crusted.sourcing.freshest.



Possible Water Source

There is a land drain feeding the trough at the back right hand corner. However, the source of water for the drain is unknown. The location is down-slope from a series of complex faults to the north and north west, and close to the boundary between the Rossendale and White Rock formations. This faulting, combined with the position in the foot of the valley, could all contribute to the reliable water supply that has justified a trough of this size.

What Next?

Follow the rising path to the south east until a gate into Back Lane, the walled track between Upperthong and Holmfirth. Turn left and follow Back Lane downhill for about 900 meters until it levels out. There is a well-trodden left turn down a steep banking to cross the stream by stepping stones. Take care as they may be slippery. Continue a short distance up to your right (NE) to the next location.

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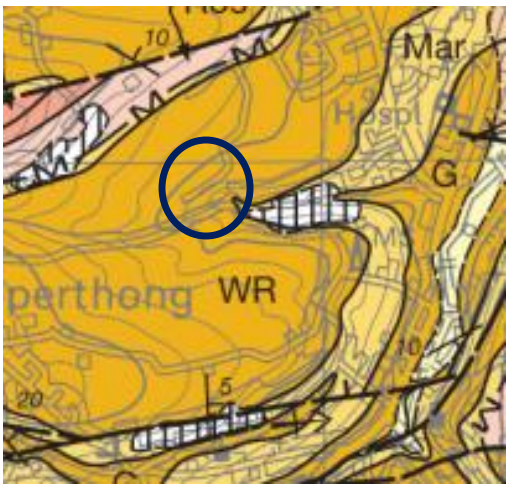
Feature and Location

Welcome to Location 5. Grid reference: SE136088. w3w: ///earful.corkscrew.bedroom. It is a seepage adjacent to the path, with no additional features such as troughs or drains. Note the variable flow has not been sufficient to erode a channel to join the main stream and has instead spread out to give a wide area of marshy ground. There are another two springs just to the west of the one pictured that shows signs that attempts have been made to channel the water. See if you can find them!



Possible Water Source

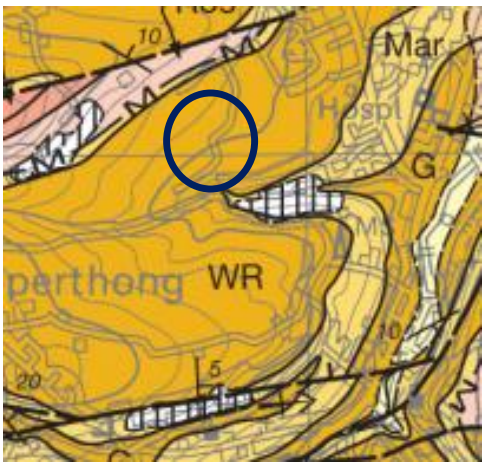
This location is in a valley bottom, on the Huddersfield White Rock. Note that the Huddersfield White Rock is exposed in the bed of the stream, just below the spring. Therefore, the water source is probably where the water table intersects the valley side, rather than permeating through the Huddersfield White Rock. The water takes the line of least resistance, emerging as a spring.

What Next?

Follow the path NE then N. Where the walled path turns sharp right, that is the next location.

Feature and Location

Continue to Location 6. Grid reference: SE136090. w3w: ///somewhere.reassured.water. It is a flooded section of path, though the flooding stops after a few days without rain.



Possible Water Source

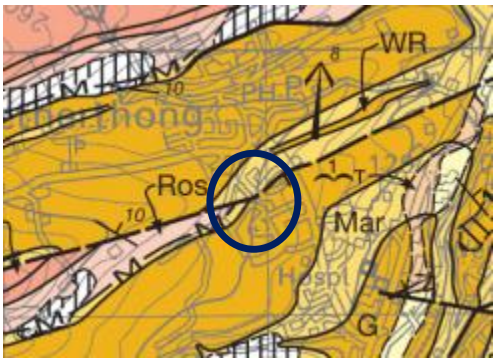
After heavy rain, you will see copious amounts of water running from the fields to your north. Note the abrupt change in vegetation in the field and those to the west, with distinct patches of a type of rush called *Juncus conglomeratus*. This plant thrives in damp fields and ditches, indicating that the ground retains water even after rainfall has ceased. The likely water source for the spring is where the water table comes to the surface by the path, and above the change in ground angle to the south. (The 1854 map shows a line of 'troughs' along this change in vegetation.)

What Next?

Follow the path NE. Take a stone stile on the right and cross the field diagonally by the fenced path. (Curiosity: Just before the stile on the right you can see a now dry stone trough in the wall to the left of the field entrance. The feed pipe appears to come out of the dry stone wall, so presumably is fed through the wall from a water source elsewhere!) Continue behind houses towards Netherthong. Take the second turning on the right, after Wells Green Gardens, heading downhill. There is a high wall to the right.

Feature and Location

This is Location 7. Grid reference: SE139094. w3w: ///trending.videos.optimally . It's a series of troughs, with a cobbled area to the front, and stone steps leading down from the top right.



Possible Water Source

It is likely that the water supply is very reliable, if not constant, to justify building this structure. The underlying geology here is more complex. There is faulting between the Huddersfield White Rock, Rossendale Formation and the Marsden Formation, another mudstone and siltstone. Faulting has possibly created a path for water to flow from the Huddersfield White Rock, through the less permeable mudstones and out to the troughs.

It is possible that these troughs were used for cleaning fleeces or cloth (and beating on the cobbles in front) before hanging on tenter hooks (the 1854 map shows adjacent tenter fields). Note also the V-notches between the troughs (rather than shallower divides seen on some other troughs).

What Next?

Return uphill to the top of the lane, turn right and you will come to the centre of Netherthong. Continue past the front of the shop and then bear left at the sharp right hand bend in the main road. Pass the Clothiers Arms on your left. At the school turn left down a setted path with a handrail on your right down to Dean Brook Road. Go right for location 8. Or if you cross Dean Brook Road and take the steep climb up to the Cricketers Arms, then turn left you will come to St. Mary's Road.

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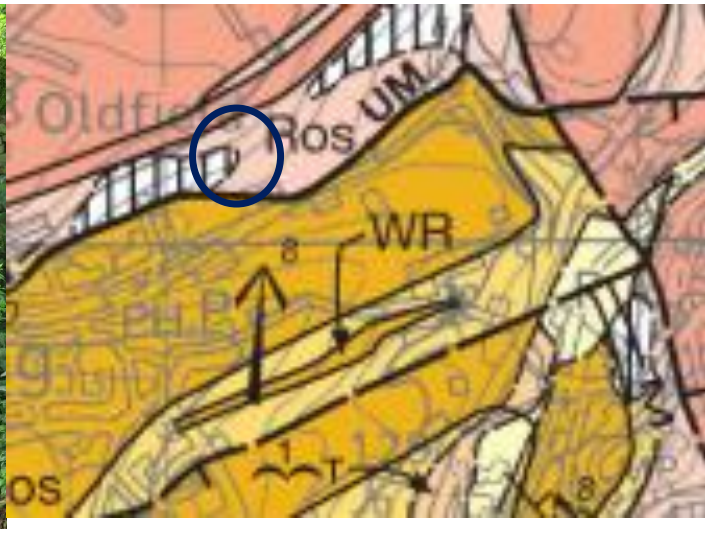
Feature and Location

This is Location 8, the final destination on the circular walk. It is on the left as you approach, on the north side of Dean Brook Road, just after a row of cottages. It is a series of troughs, though the feed is obscured behind the rear trough. Grid reference: SE142101. w3w: ///librarian.credit.parade.



Possible Water Source

Troughs set into walls are common in the area. This is an unusual example, with a large enclosed trough at the rear and two more accessible troughs at the roadside. It is possible that the rear trough was used for human drinking water and the front troughs for animals.

In this example, the water troughs are at the boundary between the Huddersfield White Rock and the Rossendale formation. It also lies on, or very close to, the Upper Meltham Coal Measure. The changes in rock type (and associated permeability) are the probable sources of water to feed these troughs. However, it is also likely that a land drain has been added to exploit the natural spring. The spring is probably permanent, or almost so, to justify building this elaborate set of troughs. The outflow from the troughs pass under the road to the walled stream on the other side. Note the walling to provide confined flow to local mills, now demolished.

What Next?

Retrace your steps west along Dean Brook Road, then branch right up Haigh Lane. Pass the Cricketers public house and continue onto St Marys Road and the St Marys estate. With luck, you'll find your car where you left it!

Supporting Information

Note that the St Marys Estate is built on the site of a former workhouse and hospital, built in 1861 and demolished in 1970. See: http://historyofnetherthong.co.uk/?p=126 and other links. The original gate house is still standing on St Marys Road, close to the first location, at w3w: ///harder.with.sparks.

There is a BGS borehole log for a borehole and water well at Deanhouse Mills (between Locations 8 and 1) (http://scans.bgs.ac.uk/sobi_scans/boreholes/40626/images/10059935.html) though interestingly it was abandoned as it was dry.

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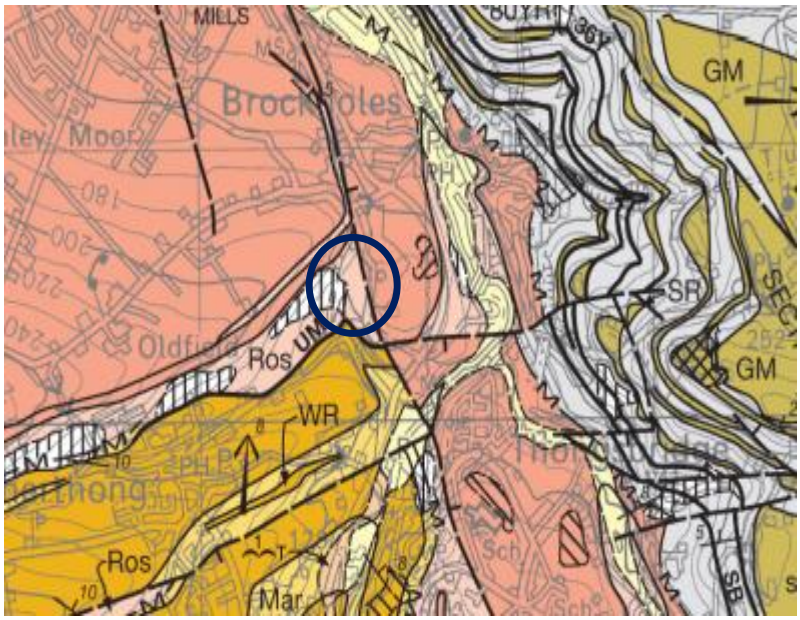
Feature and Location

This Location lies further out from the circular walk. You may wish to visit the location on the way to or from Netherthong, although it can be viewed only at a distance. It is a land drain feeding a trough, frequently visited by sheep and cows. Grid reference: SE146105. w3w:///cheese.wonderfully.much (estimated from overhead view).



Possible Water Source

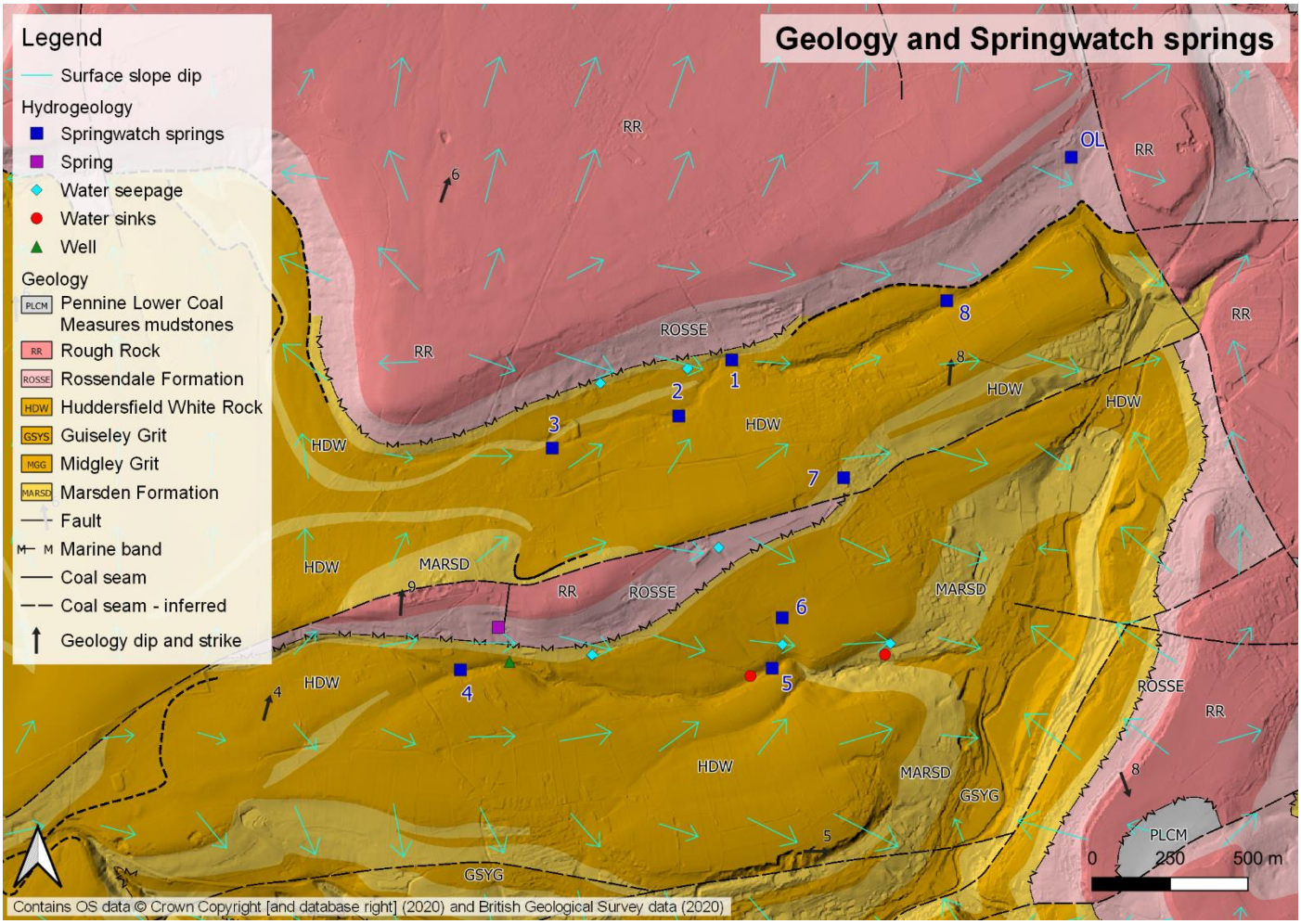
Field drains with troughs, and troughs set into walls, are common in the area. They will have been sited where there is a reliable source of clean water for horses and other farm animals.

Ground water travels down through permeable rocks. It can also travel sideways and, in some circumstances, uphill. If there is sufficient pressure, an artesian well will result. Water will also exploit weaknesses in the rocks such as faults, cracks and bedding planes.

In this case, the water trough is very close to a fault line between the Huddersfield Rough Rock and the Rossendale formation. The fault and changes in rock type (and associated permeability) are possible sources of water to feed the land drain.

Hydrology Map

This map shows the spring watch locations and other springs, seepages, sinks and wells, in relation to the underlying geology.



Additional Information:

Disclaimer

Those using this guide do so entirely at their own risk. The information is correct at time of publication, September 2020. The walk may take 2 hours or more depending on your level of interest in the surroundings. There are a couple of steepish climbs. It is on mainly good footpaths, tracks and roads. Some care may be needed on eroded footpaths and one stream crossing.

Car Parking

Netherthong is a village approximately a mile northwest of Holmfirth and is well signed from the A6024, the Huddersfield to Holmfirth road. There are car parks for customers at the Clothiers Arms and Cricketers Arms pubs. There is also parking at the Cider Press Café. Otherwise, street side parking in the St Marys estate is probably the best option.

Facilities

There are no public toilets in the area. Toilets and refreshments are available at the Clothiers Arms, the Cricketers Arms and the Cider Press Café. All are preferable to drinking the local spring water! There is a shop in the centre of Netherthong.

Public Transport

Buses run from Holmfirth and Honley/Huddersfield (308 – First Bus) or from Holmfirth and Meltham (335 – Stotts Coaches)

Access

All locations except the final outlier are on, or adjacent to, public roads and paths at the time of writing. The final outlier is remote from the other locations and is possibly best viewed from the car at the roadside.

Follow the Country Code and remember that this is agricultural land and a range of grazing livestock or horses may be encountered.

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

Copyright:

Historical Data

Historical information can be found on the 1854 map at:
https://maps.nls.uk/view/102345091

This includes wells, troughs, tenters and other relevant supporting information.