Geology walk

1. **Gibson Mill**
   - Built around 1800 of local Millstone Grit quarried from Hell Hole Quarry.

2. **Sandstones and Mudstones**
   - Along the river banks, layers of sandstones and mudstones are seen. These were laid down in the delta. The variation between the thicker sandstone beds and the thinner mudstone beds is due to the changing environment across the delta as rivers altered course and the delta built outwards into the sea.
   - At the base of the river banks, the mudstone contains fossils of goniatites. These are similar to ammonites. They have a coiled shell and swam in the seas of 300 million years ago.
   - Right: Fossil specimen from the collection of David Walker Barker.

3. **Hell Hole Quarry**
   - This disused quarry is about 20m high. The Millstone Grit quarried from here was used to build Gibson Mill, surrounding buildings and the local reservoirs. The quarry face shows large concave structures over 3m thick. These are called giant scale cross bedding and are cut away views through preserved sand bars that formed in the river channels.

4. **Hardcastle Crags**
   - Hardcastle Crags are an outcrop of Millstone Grit. The patterns seen in the rock face are trough cross-bedding similar to that seen in Hell Hole quarry, but on a smaller scale. These are cut aways through small dunes, similar to those seen in river channels today. Cross-bedding gives the direction of the current that formed the sand dune. In the sketch on the right the current would have flowed from right to left.
   - Right: Sketch of the trough cross-bedding pattern.

This circular route follows the ‘Railway Trail’ which starts and ends at Gibson Mill. From the mill courtyard, cross the bridge then turn right and follow the purple waymarkers. (shown as dotted white line on map). Please be aware that the route is uneven and steep in places and may be muddy or slippery. Allow approximately 1 1/2 - 2 hours to complete the walk.