

# River Hodder

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## MAP TO GO HERE

Map extract from DigMap50k showing the location of Collyholme Wood and the distribution of Pendleside Limestone Formation limestones (in turquoise) and limestone boulder beds (purple), with underlying Hodder Mudstone Formation to NW and overlying Bowland Shale Formation present to SE.

□

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## River Hodder, Collyholme Wood, Lancashire [SD 719 576]

The River Hodder section at Collyholme Wood shows good exposures in the Pendleside Limestone Formation, for which this locality is a reference section, and lower part of the Bowland Shale Formation (Arthurton et al., 1988)<sup>[1]</sup>.

### [BOWLAND SHALE FORMATION](#)

Much of the lower (Brigantian) part of the Bowland Shales Formation sequence is exposed [SD 7205 5743 to 7255 57221] in the banks of the River Hodder, east of [Collyholme Wood](#).

An exposure [SD 7233 5722] of mudstone contains a few thin beds of partly laminated limestone ranging from calcisiltite to medium [calcarenite](#), and bearing groove- and prod-casts. Poorly-laminated, fine [calcarenite](#) beds are typically sharp-based and the top of the limestone grades to [mudstones](#). There are also limestone bullions up to 1 m across and 0.25 m thick, and 0.25 m of mudstone [conglomerate](#) with limestone clasts up to 3 cm across. Interbedded limestones continue into the highest parts of the section where they are locally slumped (Arthurton et al., 1988, p. 68). The sequence here contains *Neoglyphioceras subcirculare* indicative of P<sub>2b</sub> age.

20 m lower in the sequence a P<sub>2a</sub> fauna including *Sudeticeras crenistriatum* is recorded at an exposure [SD 7224 5723] where there are beds of calcisiltite and [calcarenite](#) (Arthurton et al., 1988, p. 68).

20 m lower in the sequence, towards the base of the formation, there are P<sub>1d</sub> mudstones and 'striped

beds', resting on laminated calcareous mudstones containing 0.35 m of mudstone [conglomerate](#) with pale and dark limestone clasts up to 10 cm. Beneath this, there are two thin beds of fine-grained, siliceous sandstone totalling 16 cm are present [SD 7210 5740], with groove-casts trending N45°W (Arthurton et al., 1988, p. 68).

## **PENDLESIDE LIMESTONE FORMATION**

Comprises a 21 m thick succession, with lower beds of planar bedded lime mudstone/[wackestone](#) interbedded with upward fining [calcarenites](#) and occasional mudstones, overlain sharply by interbedded massive and upward fining calcarenites and limestone breccias [SD 719 576]. The breccias include chaotic, upward fining and reverse graded units (Gawthorpe, 1986 p197)<sup>[2]</sup> [LINK TO SECTION](#). Bedded limestones intercalated in the lower part of the limestone conglomerate subdivision are exposed in the River Hodder [SD 7185 5773 to 7192 5752]; the limestones are mostly cherty, intensely bioturbated, medium-dark grey, fine calcarenite packstones. The upper part of the limestone conglomerate, exposed farther downstream [SD 7191 5761 to 7204 5743] is largely [dolomitized](#) and includes much dark limestone debris in clasts up to 16 cm where unaltered. Towards the top of the formation, interbedded [calcirudite](#) and calcarenite packstone-grainstone with subordinate beds and lenses of mudstone are present. Angular clasts of pale calcilutite of reef facies are set in a dark, partly [dolomitic](#) matrix including crinoid, shell and coral debris. [LINK TO LOCALITY IMAGE](#). The highest beds are slump-folded (Arthurton et al., 1988 p61). [\[1\]](#)



Pendleside  
Limestone  
Formation in the  
River Hodder,  
Collyholme Wood.  
Limestone  
conglomerate  
near top of  
formation  
comprises angular  
clasts of pale  
calcilutite of reef  
facies set in a  
dark, partly  
dolomitic matrix  
including crinoid,  
shell and coral  
debris. View  
vertical on river  
bed. [P223853](#).

## **References**

1. [↑](#) ARTHURTON, R S, JOHNSON, E W, and MUNDY, D J C. 1988. *Geology of the country around Settle*. Memoir of the British Geological Survey Sheet 60 (England and Wales).
2. [↑](#) GAWTHORPE, R. 1986. Sedimentation during carbonate ramp-to-slope evolution in a tectonically active area: Bowland Basin (Dinantian), N. England. *Sedimentology*, Vol. 33, 185-206.

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