

Clyde Sandstone Formation

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[Jump to navigation](#) [Jump to search](#)

□

Contents

- [1 Clyde Sandstone Formation, \(CYD\) Carboniferous, Midland Valley of Scotland](#)
 - [1.1 Name](#)
 - [1.2 Lithology](#)
 - [1.3 Genetic interpretation](#)
 - [1.4 Stratotype](#)
 - [1.5 Lower and upper boundaries](#)
 - [1.6 Thickness](#)
 - [1.7 Distribution and regional correlation](#)
 - [1.8 Age](#)
 - [1.9 Formal subdivisions](#)
- [2 References](#)

Clyde Sandstone Formation, **(CYD)** Carboniferous, Midland Valley of Scotland

Clyde Sandstone Formation is part of the [Inverclyde Group](#).

Name

From the River Clyde. The name Clyde Sandstone Formation was introduced by Paterson and Hall (1986)^[1] for sandstone-dominated strata, with 'cornstones', overlying the Ballagan Formation in the west of the Midland Valley.

Lithology

The Clyde Sandstone Formation consists predominantly of white, fine- to coarse-grained sandstone, commonly pebbly, with beds of red-brown or grey mudstone. Pedogenic limestone, as nodules or beds, and calcite cemented concretionary sandstones are also present in some areas. In more northerly areas some of the sandstones are conglomeratic, with pebbles of quartz and 'Highland' rock types (Browne et al., 1999)^[2]. Elsewhere the clasts are largely of intrabasinal limestone or mudstone.

Genetic interpretation

The strata were laid down in a wide range of fluvial environments ranging from braided stream to floodplain with well developed overbank deposits.

Stratotype

The partial type sections (composite stratotype) of the Clyde Sandstone Formation are in the Barnhill Borehole (BGS Registration Number NS47NW/2) (NS 4269 7571), just east of Dumbarton

where the base and top of the formation occur at 161.5 and 104.9 m depth respectively, and in the Knocknairshill Borehole (BGS Registration Number NS37SW/10) (NS 3056 7438), east of Greenock, where the base and top of the formation occur at 222.9 and 50.7 m depth respectively.

Lower and upper boundaries

The transitional base of the formation is taken at the lithological boundary between strata consisting predominantly of white sandstone with pedogenic limestone and the underlying mudstone and cementstone association of the Ballagan Formation (Figure 6, Columns 1-3, 4B). The top is overlain variously by sedimentary or volcanic formations of the Strathclyde Group.

Thickness

The maximum thickness is greater than 300 m in the Glasgow area (Paterson and Hall, 1986, p.11)^[1], 250 m on Arran (BGS, 1987a)^[3], 75 m at Bute and Cowal and 148 m in the Cumbrae Isles (BGS, 2008)^[4].

Distribution and regional correlation

The Clyde Sandstone Formation now extends throughout the Midland Valley and occurs on Arran, at Bute and Cowal and in the Cumbrae isles. It replaces the term Balcomie Formation (Browne, 1986)^[5] in Fife. The 'Upper Sandstone' of the Pentland Hills (Mitchell and Mykura, 1962, p.38)^[6] may also belong to it.

Age

Late Tournaisian

Formal subdivisions

Members of the Clyde Sandstone Formation, in ascending order, include:

Isle of Arran: [Laggantuin Cornstone Member](#) (LGT)

Isle of Bute: [Ascog Member](#) (ASO)

Cumbrae Isles: [Millport Cornstones Member](#) (MLC)

South of the River Clyde: [Knocknairshill Member](#) (KKS); [Gourock Sandstone Member](#) (GKA); [Broadlee Glen Sandstone Member](#) (BRLG)

North of the River Clyde: [Overtoun Sandstone Member](#) (OVS)

References

- ^[1] Paterson, I B, and Hall, I H S. 1986. Lithostratigraphy of the late Devonian and early Carboniferous rocks in the Midland Valley of Scotland. Report of the British Geological Survey, Vol. 8, No. 3
- ^[3] Browne, M A E, Dean, M T, Hall, I H S, McAdam, A D, Monroe, S K, and Chisholm, J I. 1999. A lithostratigraphical framework for the Carboniferous rocks of the Midland Valley of Scotland. British Geological Survey Research Report, RR/99/07

3. [↑](#) British Geological Survey. 1987a. Arran. Scotland Special Sheet, 1:50.000 Series. Bedrock. (Southampton: Ordnance Survey for the British Geological Survey.)
4. [↑](#) British Geological Survey. 2008. Dunoon and Millport. Scotland Sheet 29E with part of 21E. Bedrock and Superficial Deposits. 1:50.000. (Keyworth, Nottingham: British Geological Survey.)
5. [↑](#) Browne, M A E. 1986. The classification of the Lower Carboniferous in Fife and Lothian. Scottish Journal of Geology, Vol. 22, 422-425
6. [↑](#) Mitchell, G H, and Mykura, W. 1962. The Geology of the neighbourhood of Edinburgh. Memoir of the Geological Survey of Great Britain, Sheet 32 (Scotland)

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[Category:](#)

- [Carboniferous lithostratigraphical nomenclature](#)

Navigation menu

Personal tools

- Not logged in
- [Talk](#)
- [Contributions](#)
- [Log in](#)
- [Request account](#)

Namespaces

- [Page](#)
- [Discussion](#)

Variants

Views

- [Read](#)
- [Edit](#)
- [View history](#)
- [PDF Export](#)

More

Search

Navigation

- [Main page](#)
- [Recent changes](#)
- [Random page](#)
- [Help about MediaWiki](#)

Tools

- [What links here](#)
- [Related changes](#)
- [Special pages](#)
- [Permanent link](#)
- [Page information](#)
- [Cite this page](#)
- [Browse properties](#)

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- [Disclaimers](#)

