

Geology of the Aberfoyle district: Pre-caledonian amphibolite sheets (Neoproterozoic Basic Minor Intrusion Suite)

From Earthwise

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

This topic provides a summary of the geology of the Aberfoyle district - covered by the British Geological Survey. 1:50k geological map sheet 38E (Scotland).

Authors: C W Thomas, A M Aitken, E A Pickett, J R Mendum, E K Hyslop, M G Petterson, D Ball, E Burt, B Chacksfield, N Golledge and G Tanner (BGS).

The oldest igneous intrusions within the district are a series of cleaved amphibolite/metadolerite sheets of Neoproterozoic age. They crop out around the northern end of Loch Lubnaig, and are particularly common on the northern and eastern slopes of Benvane [NN 535 137], locally forming a dense sill complex. The amphibolite sheets are mostly sills, a few metres or tens of metres thick, occurring predominantly within rocks of the Loch Katrine Volcaniclastic Formation or older units. These intrusions belong to a wider suite of mafic rocks, developed around the Argyll-Southern Highland Group boundary throughout the Dalradian of Scotland, and occurring in the northern half of Ireland. Their emplacement is related to the opening of the Iapetus Ocean at about 600 Ma (e.g. Stephenson and Gould, 1995^[1]).

The amphibolites are dark green, commonly massive rocks. Often they have a speckled appearance and preserve relict igneous textures. Hornblende and plagioclase feldspar dominate the mineralogy. The margins of the amphibolite sheets are commonly schistose, whilst the interiors are more isotropic; thin sheets may be schistose throughout. Elsewhere in the southern Highlands similar amphibolites sheets at this level record a complex history of fluid-rock interaction, between the fluids generated by the amphibolites and host rocks and the rocks themselves during prograde and retrograde metamorphism (Skelton et al., 1995^[2]; Graham et al., 1997^[3]).

References

1. [↑](#) Stephenson, D, and Gould, D. 1995. The Grampian Highlands (Forth edition). *British Regional Geology*. (London: HMSO for the British Geological Survey.)
2. [↑](#) Skelton, A D L, Graham, C M, and Bickle, M J. 1995. Lithological and Structural Controls of Regional 3-D Fluid Flow patterns during Greenschist Facies Metamorphism of the Dalradian of the SW Scottish Highlands. *Journal of Petrology*, Vol. 36, 563-586.
3. [↑](#) Graham, C M, Skelton, A D L, Bickle, M, and Cole, C. 1997. Lithological, structural and deformation controls on fluid flow during regional metamorphism. 196-226 in Deformation-enhanced fluid transport in the Earth's crust and mantle. Holness, M B (editor). *Mineralogical Society Series*, No. 8. (London: Chapman and Hall.)

Geology of the Aberfoyle district - contents

[Summary](#)

[Introduction](#)

[Geological summary](#)

[History of research](#)

[Neoproterozoic to Cambrian: Dalradian supergroup](#)

[Highland Border Complex: Introduction](#)

[Principal tectonostratigraphical units](#)

[Devonian](#)

[Arbuthnot-Garvock Group \(ATGK\)](#)

[Strathmore Group \(SEG\)](#)

[Stratheden Group](#)

[Carboniferous](#)

[Inverclyde Group \(INV\)](#)

[Quaternary](#)

[Pleistocene](#)

[Holocene](#)

[Minor intrusions](#)

[Pre-caledonian amphibolite sheets \(Neo-proterozoic Basic Minor Intrusion Suite\)](#)

[Late-caledonian minor intrusions \(North Britain Siluro-Devonian Calc-alkaline Suite\)](#)

[Late-carboniferous quartz-dolerite dykes \(Central Scotland Late Carboniferous Tholeiitic Dyke Swarm\)](#)

[Basalts of unknown age within the highland border complex and the lower Devonian](#)

[Palaeogene basalts and dolerites](#)

[Structural history](#)

[Caledonian structures in the highland border complex and dalradian supergroup](#)

[Faulting](#)

[Metamorphism](#)

[Concealed geology](#)

[Regional and crustal-scale context](#)

[Gravity anomalies](#)

[Magnetic data](#)

[Applied geology: Quarry products](#)

[Sites of scientific interest and outstanding beauty](#)

[Water resources](#)

[Geohazards](#)

[Information sources](#)

Retrieved from

'[http://earthwise.bgs.ac.uk/index.php?title=Geology_of_the_Aberfoyle_district:_Pre-caledonian_amphibolite_sheets_\(Neo-proterozoic_Basic_Minor_Intrusion_Suite\)&oldid=53097](http://earthwise.bgs.ac.uk/index.php?title=Geology_of_the_Aberfoyle_district:_Pre-caledonian_amphibolite_sheets_(Neo-proterozoic_Basic_Minor_Intrusion_Suite)&oldid=53097)'

Category:

- [Aberfoyle - the geology of the district](#)

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](#)

• This page was last modified on 29 July 2021, at 13:57.

- [Privacy policy](#)
- [About Earthwise](#)
- [Disclaimers](#)

