

DONEGAL - COUNTY GEOLOGICAL SITE REPORT

NAME OF SITE	Lough Lareen
Other names used for site	Knader Lough
IGH THEME	IGH5 Precambrian
TOWNLAND(S)	Knader
NEAREST TOWN/VILLAGE	Ballyshannon
SIX INCH MAP NUMBER	107
ITM CO-ORDINATES	589847E, 861540N
1:50,000 O.S. SHEET NOS: 16, 17	GSI BEDROCK 1:100,000 SHEET NOS: 3, 4
GIS Code DL025	

Outline Site Description

Prominent outcrops on a small steep hillock in area of blanket bog and rough grassland, approximately mid-way between Lough Lareen and Knader Lough.

Geological System/Age and Primary Rock Type

The rocks are metagabbro (c.580 Ma), calc-silicates and gneisses of the Precambrian Sliswood Division (Lough Derg Inlier).

Main Geological or Geomorphological Interest

This Precambrian massive dark-green metagabbro intrusion has well-preserved primary igneous textures despite undergoing several later phases of metamorphism and deformation. The preserved magmatic mineral assemblage, comprising clinopyroxene, plagioclase and rutile, has been dated at approximately 580 Ma, providing an age for igneous intrusion as well as a maximum age for high-grade metamorphism in the Sliswood Division (Lough Derg inlier). In the Sliswood Division, the earliest metamorphism was high-grade eclogite facies metamorphism and it was followed by three stages of retrograde metamorphism: granulite, amphibolite and greenschist facies metamorphism. Partial recrystallization of the original mineral assemblage in the Lough Lareen metagabbro has been interpreted as evidence for high-grade metamorphism (eclogite – granulite – amphibolite facies). The original igneous mineral assemblage (pyroxene, plagioclase, ilmenite) in the gabbro is visible only under the microscope but, in the field, large (5mm+) irregularly shaped porphyritic plagioclase crystals can be seen in places. The effects of deformation are apparent in shear fabrics visible in outcrop, especially in the outer contact zone. The host rocks are Sliswood Division calc-silicates and gneisses.

Site Importance: County Geological Site; may be recommended for Geological NHA

This site is a good outcrop of a basic igneous intrusion within the Precambrian Sliswood Division that has undergone metamorphism and deformation. The metagabbro has retained an original igneous mineral assemblage as well as mineralogical evidence of high-grade metamorphism. The isotopic dating of the igneous mineral assemblage has provided an important age datum for the Sliswood Division. Nevertheless, as there are no macroscopic textures of major interest, the site is likely to attract mainly scientists with a specific interest in the igneous and metamorphic history of the Precambrian Lough Derg Inlier.

Management/promotion issues

The site is on private land within an area of rough pastureland, with individual fields separated by secure barbed-wire fences and drainage ditches. There is a dwelling house and a farm outbuilding immediately south and east of the site, and the presence of grazing animals. The site appears unsuitable for building and there are no other obvious threats to its preservation. It does not require further promotion.



Lough Lareen metagabbro outcrop, top right, viewed from north.



Top of metagabbro outcrop, view to west.



Close-up of metagabbro with plagioclase phenocrysts (white).

