GALWAY - COUNTY GEOLOGICAL SITE REPORT

NAME OF SITE Other names used for site IGH THEME TOWNLAND(S) NEAREST TOWN/VILLAGE SIX INCH MAP NUMBER ITM CO-ORDINATES 1:50,000 O.S. SHEET No. 45 Loch na gClocha Ballagh

IGH11 Igneous intrusions Gleann Treasna (Glentrasna) Maam Cross 53 497710E 741120N GSI BEDROCK 1:100,000 SHEET NO. 10

Outline Site Description

This site consists of a large outcrop on the edge of a lake.

Geological System/Age and Primary Rock Type

Composite dyke of Devonian (Late Caledonian) age composed of dolerite with a more silicic axial zone. The dyke is intruded into Ordovician agmatite.

Main Geological or Geomorphological Interest

The dyke at Loch na gClocha Ballagh is part of the na hUillinní dyke system of eastern Connemara, one of several dyke systems that make up the Teach Dóite suite. The Teach Dóite suite represents the final phase of the magmatic activity that led to intrusion of the Galway Granite batholith. The na hUillinní dyke system runs north-northeast / southsouthwest (NNE-SSW); dykes were emplaced along faults. The dykes were formed from mafic or basaltic magma that was emplaced around the solidifying Galway Granite batholith, causing partial melting and the generation of felsic or rhyolitic magmas. These magmas of contrasting composition combined to form composite dykes. In places, mixing between magmas led to the formation of magmas of hybrid composition.

On the northern shore of Loch na gClocha Ballagh, a composite dyke almost 4 m in width is very well exposed. It consists mainly of dolerite but with a central axial zone of more felsic or silicic granophyre rock. The granophyre is contaminated by mafic magma, pointing to mixing of magmas at depth prior to intrusion of the dyke. The axial zone contains abundant rounded pieces of dolerite, fragments of mafic magma entrained within the more felsic magma that forms the granophyre at the centre of the dyke. Contacts between the dyke and the enclosing Ordovician gneiss are sharp although in places irregular, reflecting interfingering and corrosion of the gneiss by the mafic magma.

Site Importance – County Geological Site

The site is within the Connemara Bog Complex SAC and proposed NHA (sitecode 002034). The site contains an excellent, readily accessible exposure of a composite dyke of the na hUillinní dyke system, part of the Teach Dóite magmatic suite of eastern Connemara. The rounded dolerite fragments in the axial zone of the dyke and the contaminated granophre that forms the axial zone of the dyke are evidence for mixing of mafic and felsic magmas prior to dyke emplacement.

Management/promotion issues

The site is a short distance east of the R336 that runs south from Maam Cross, on private land separated from the road by a low fence. The land is used for sheep grazing. The site is likely to be mainly of interest to researchers and students of geology and does not require further promotion.



View southward into lake along dyke. Hammer is approximately in centre of dyke; western contact with gneiss visible at right of photo, eastern contact also visible with gneiss forming raised part of outcrop.



Fragments of dolerite in granophyre in axial zone of dyke.



Irregular, if sharp, contact between dolerite and gneiss at dyke margin. Small fragment of gneiss (below and left of coin) has broken off from wall during dyke emplacement while dolerite has partly wedged out a larger piece of gneiss (below and right of coin).



Meehan et al. 2019. Geological Survey Ireland.