

GALWAY - COUNTY GEOLOGICAL SITE REPORT

NAME OF SITE	Letterfrack Granite
Other names used for site	
IGH THEME	IGH11 Igneous
TOWNLAND(S)	Letterfrack
NEAREST TOWN/VILLAGE	Letterfrack
SIX INCH MAP NUMBER	23
ITM CO-ORDINATES	472025E 756900N
1:50,000 O.S. SHEET No. 44	GSI BEDROCK 1:100,000 SHEET NO. 10, 11

Outline Site Description

Granite outcrops and moraines on upland terrain at Connemara National Park.

Geological System/Age and Primary Rock Type

Late-Caledonian Connemara granodiorite emplaced c. 420 million years ago (late Silurian-early Devonian). Two main types of grey-coloured, biotite-rich granodiorites occur in the pluton, distinguished by their grain size (coarse and fine).

Main Geological or Geomorphological Interest

The Letterfrack Granite is one of a number of Connemara granite plutons that were emplaced c. 420 Ma to the north/northwest of the Skird Rocks Fault (an extension of the major east-west trending Southern Uplands Fault in western Ireland). These plutons preceded the emplacement of the 'main' Galway Granite batholith that extends from Murvey/Errisbeg eastwards to Galway City. Two facies of granodiorite have been described from the Letterfrack pluton: a coarse and fine granodiorite type. The finer typically outcrops in the cores of the exposed intrusions while the coarser variety is found in the outer margins. The granodiorites are biotite-rich and host K-feldspar (microcline perthite or orthoclase micropertthite). The finer grained facies has a higher abundance of K-feldspar.

GSI 1:100,000 scale bedrock data shows the Letterfrack Granite cropping out as five separate bodies in the Letterfrack area, close to the fold axis on the northern limb of the major WNW-ESE trending fold that traverses Connemara: the Connemara Antiform. The two largest bodies occur on the southern side of Diamond Hill and on the Ungwee/Moyard townland boundary, 4 km WSW of Diamond Hill. The Letterfrack Granite was emplaced into Neoproterozoic Dalradian metasediments (quartzite, schist, marble). Localised chilled margins occur along the pluton-country rock (Dalradian metasediments) contact zone. Radiometric dating (Molybdenite Re-Os) has yielded geochronological age determinations for granite-related molybdenite mineralisation in other granite bodies occupying the western end of the batholith (Omey Granite, Roundstone Murvey Granite). These ages indicate episodic granite emplacement spanning a period of c. 40 million years, from c. 423 Ma in the northwest (NW) Omey pluton to c. 380 Ma at Costelloe in the east.

Site Importance – County Geological Site

This site contains good, accessible exposures of igneous rocks. The site is located within Connemara National Park and The Twelve Bens/Garraun Complex SAC and pNHA (site code 002031). Granite magmatism and mineralisation in Connemara is associated with the Appalachian-Caledonian orogeny (mountain-building events), and the magmatic event is similar to other sectors of the orogeny (Scotland, Donegal, Newfoundland, New England).

Management/promotion issues

Easily accessible outcrops are ideal for promotion to visitors to Connemara National Park, as part of the Visitor Centre experience. The geological heritage of the Letterfrack Granite and the other plutons in Connemara is a key topic of any literature pertaining to the history of the Connemara landscape and the broader geological story of Ireland.



View of Tully Mountain and Ballynakill Harbour, looking WNW from Diamond Hill walking route.



View west from granite boulder on walking route. Diamond Hill in background. Route traverses boggy kame terrace strewn with granite boulders.



The prominent granite boulder along the Diamond Hill Walk route. Slabs of local Dalradian schist surround the boulder.



Coarse-grained, grey-coloured, biotite-rich granodiorite alongside walking route.



Slabs of Dalradian schist in bags used along walking route. Granite boulders on hillside. Diamond Hill in background.

