

## DONEGAL - COUNTY GEOLOGICAL SITE REPORT

NAME OF SITE	Dunmore Head Breccia Pipe
IGH THEME	IGH11 Igneous Intrusions
TOWNLAND(S)	Lackagh
NEAREST TOWN	Portnoo
SIX INCH MAP NUMBER	64
ITM CO-ORDINATES	569000E, 899997N
1:50,000 O.S. SHEET NUMBER: 10	GSI BEDROCK 1:100,000 SHEET NOS. 3, 4
GIS Code DL013	

### Outline Site Description

The site, which is north-northeast of the summit of Dunmore Hill, comprises rugged coastal outcrops beyond a farm fence. There is excellent exposure of all key features.

### Geological System/Age and Primary Rock Type

The breccia fragments come from the adjacent Falcarragh Limestone Formation of the Dalradian Appin Group (deposited c. 800 to 750 Ma and metamorphosed between 475 and 385 Ma). About 200m east of the breccia is an appinite intrusion, which is part of the appinite suite associated with the Ardara granite and other early Donegal plutons (c. 400 Ma).

### Main Geological Interest

The Dunmore breccia pipe contains locally derived fragments of the Falcarragh Limestone Formation country rocks, into which it has been intruded. The Falcarragh Limestone Formation fragments are obviously locally derived (the formation crops out a short distance eastwards along the coast) as they have been shattered, broken and chaotically mixed, without appreciable abrasion, within the breccia.

Two types of breccia are associated with the Donegal appinite suite: 1) intrusion breccia pipes that contain country rock transported over varying distances and 2) marginal breccias that form a capping to appinitic intrusions, for example at Naran Hill.

The Dunmore Head Breccia Pipe is thought to be an intrusion breccia, formed by tectonic stresses and fracturing of rocks with the opening of conduits by explosive force. Upward streaming gas or gas-rich magma from great depths reacted explosively with enclosing lithologies, fracturing and brecciating the rocks, and then ascending extremely rapidly with the enclosed rock fragments. At Dunmore Head, formation of the breccia took place almost *in situ*, as the lack of abrasion of the breccia clasts indicates that they did not move very far after fragmentation. In other cases, e.g. the Kilkenny Breccia Pipe, the rock fragments were transported over considerable distances. Although evidence supports the intrusive genesis of the Dunmore Head Breccia Pipe, it has also been suggested that it may be a marginal breccia, representing the roof of the poorly exposed appinite body immediately to the east.

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

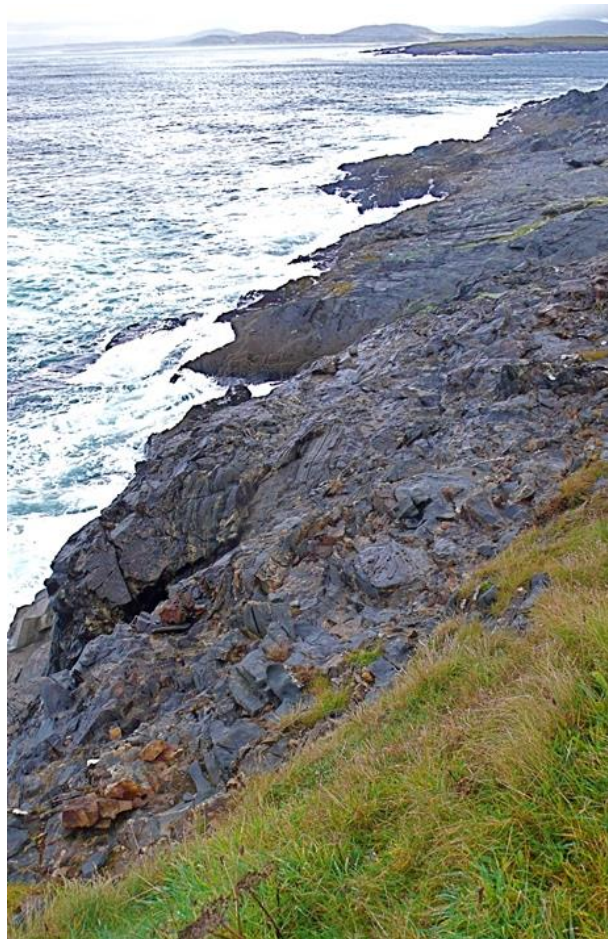
The Dunmore Head Breccia Pipe differs from some other intrusion breccia pipes in Donegal, such as the Kilkenny Breccia Pipe, in that the breccia fragments are derived from the adjacent country rock and there is no evidence of appreciable transport of the clasts. Its formation is of interest in the context of breccia pipe genesis, as there is also some justification for its classification as a marginal breccia.

### Management/promotion issues

The entire coastal section of the site is within the West of Ardara/Maas Road SAC and proposed NHA (00197). Access is along an overgrown and badly maintained coastal path from Portnoo harbour (1.5km to the east), and then via rough pasture and barbed wire fences. Tides and weather conditions are also factors limiting the suitability of the site for general promotion. Its interest is probably mainly for geology students and researchers.



Dunmore Head Breccia Pipe, showing the chaotic mix of clasts.



View eastward to Inishkeel Island, with breccia pipe in foreground and Falcarragh Limestone Formation beyond.



