

## NORTH DONEGAL - COUNTY GEOLOGICAL SITE REPORT

<b>NAME OF SITE</b>	<b>Miogmaitít an Mhill Mhóir</b>
Other names used for site	Melmore Migmatite, Melmore Rosguill
<b>TOWNLAND(S)</b>	<b>Melmore; Gortnalughoge</b>
<b>NEAREST TOWN/VILLAGE</b>	<b>Na Dúnaibh (Downies)</b>
<b>SIX INCH MAP NUMBER</b>	<b>8</b>
<b>ITM CO-ORDINATES</b>	<b>613417E 943590N</b>
<b>1:50,000 O.S. SHEET NUMBER 2</b>	<b>GSI 1:100,000 Bedrock Sheet No. 1</b>
<b>GIS Code ND037</b>	

### **Outline Site Description**

The site comprises extensive, low coastal exposures on either side of a sandy beach at Tranafaighaboy (Trá na Faiche Buí), south of Melmore Head (An Meall Mór) in Rosguill (Ros Goill).

### **Geological System/Age and Primary Rock Type**

The Melmore Migmatite is a distinctive facies of the Fanad Granite, one of the oldest component plutons of the Caledonian Donegal batholith (c. 400 Ma). Various Precambrian Dalradian lithologies, including pelite, quartzite, marble, metadolerite and appinite, occur as xenoliths within the migmatite.

### **Main Geological or Geomorphological Interest**

Migmatite is a composite rock, comprising dark and light-coloured parts (melanosomes and leucosomes). The dark parts typically resemble metamorphic rocks, the light parts granitic rocks. Formation of migmatite typically occurs under conditions of high temperature where the original rock undergoes partial melting. The melt cools to form an igneous rock of granitic composition, leaving a mixture of two different rock types.

The Melmore Migmatite occurs along a north–south-trending ductile shear zone. It has been interpreted as a roof pendant within the Fanad Granite that has undergone veining, deformation and partial melting. The migmatite exposed at the site comprises mainly semi-pelites and dolerites that have undergone veining by and reaction with granitic material. Reaction between semi-pelites or dolerites and granite has led to the formation of rocks of intermediate composition. Spectacular examples of net-veined dolerite are exposed on the south side of Tranafaighaboy but all gradations in composition between granite and dolerite can be observed. The same is true for semi-pelites and granite.

### **Site Importance – County Geological Site; may be recommended for Geological NHA**

The site provides excellent exposure of the Melmore Migmatite, a distinctive and unusual facies of the Fanad Granite, in which semi-pelite, dolerite and other country rocks are mixed with granite to form composite rocks.

### **Management/promotion issues**

The site is on the foreshore to north and south of Tranafaighaboy beach that can be reached from the nearby public road. Exposure of the migmatite continues northwards to Melmore Head but the public road terminates at a caravan park at the northern end of Tranafaighaboy. The exposure here contains many spectacular examples of migmatitic rocks and the site should be included in any geological promotional literature material for the area.



Semi-pelite (grey) with granitic material (cream, pink) along bedding planes and in cross-cutting, complexly deformed veins.



Reaction (top right) between granite and semi-pelite xenolith (grey) along bedding planes in latter.



Reaction between granite and dolerite (grey) to form dioritic rock. Note relict dolerite clasts (top centre).



